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ABSTRACT

This report represents a first step in a voluntary cooperative effort among Federal and State governments and education associations to: identify the most critical needs for education policy information; assess the present capacity of the national statistical system to address these needs; and provide broad direction for system improvements. Thirty-six specific statistical recommendations are presented that are intended to provide a context for subsequent investigations of resource needs, feasibility, costs, burdens, and benefits associated with implementing the national education data agenda and the development of a strategic plan to improve the data system. The guide examines the nature and adequacy of national data in four major domains: (1) background and demographics; (2) education resources; (3) school processes; and (4) student outcomes. For each domain, the guide discusses the importance of the data for policy purposes, the nature and limitations of current collections and reports, potential strategies for improvement, and specific data improvement recommendations. This guide was developed by using a broad-based consensus building process by members of the National Forum on Education Statistics. Six figures supplement the text. A 67-item list of references is included. (SLD)

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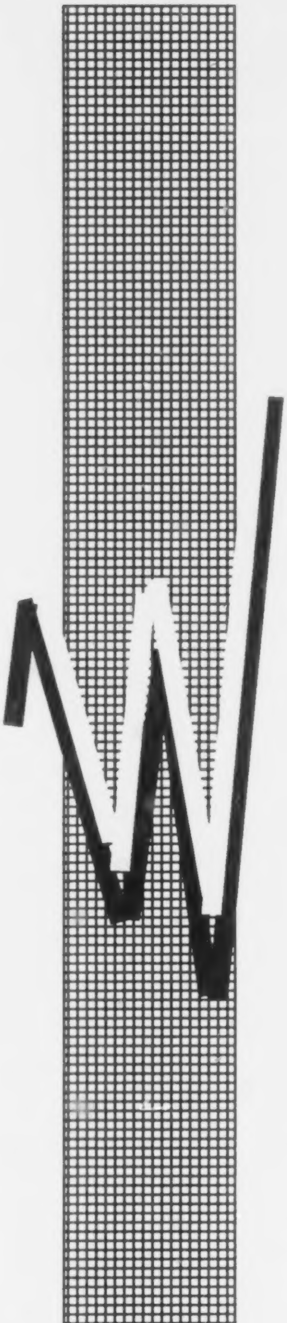

A GUIDE TO

IMPROVING THE NATIONAL EDUCATION DATA SYSTEM

A Report by The National Education Statistics Agenda Committee of the National Forum on Education Statistics

October 1990

Edited by:
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National Center for Education Statistics

"The purpose of the Center shall be to collect, and analyze, and disseminate statistics and other data related to education in the United States and in other nations."—Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e–1).

March 1991

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A Guide To Improving the National Education Data System

PREAMBLE

In response to the congressional mandate of the Hawkins-Stafford Education Amendments of 1988 (P.L. 100-297), the National Forum on Education Statistics has adopted this report--*A Guide To Improving the National Education Data System*--as a first step in a multistage process designed to improve the quality of the national education data system. It represents a voluntary, cooperative effort among the Federal Government, States, and education associations to:

- identify the most critical needs for education policy information,
- assess the present capacity of the national statistical system to address these needs, and
- provide broad direction for system improvements based on this analysis.

The *Guide* addresses a broad array of data collection and statistical reports pertaining to education from Federal and State agencies and other sources. The 36 specific statistical improvement recommendations included in the *Guide* are intended to provide a substantive context for subsequent investigations of resource needs, feasibility, costs, burdens, and benefits associated with implementing this agenda for improvement and for developing priorities and plans of action based upon the findings. These investigations, in turn, will lead to the development of a strategic plan that will:

- determine implementation priorities based on the system improvements recommended in the *Guide*,
- identify the considerations that must be addressed before particular recommendations can be implemented,
- describe the steps that should be taken to address these considerations, and
- establish timetables for implementation.

The National Forum expects that those who implement statistical policies in education will find the *Guide* valuable in accomplishing data system improvement. Creating an improved national education data system based on a spirit of cooperation and consensus building will result in higher quality data, superior policymaking, and, ultimately, a more effective and efficient education system.

RESOLUTION

The National Forum on Education Statistics adopts the report of the National Education Statistics Agenda Committee--*A Guide To Improving the National Education Data System*--as representing both (1) long range direction for the improvement of the national statistical system and (2) a substantive framework to focus future efforts of the National Forum. The membership will investigate issues of resource needs, feasibility, burden, costs, and benefits associated with implementing this improvement agenda and develop priorities and plans of action based upon these findings.

PREFACE

An era of education renewal was launched in the early 1980s when the U.S. Secretary of Education warned that America was a "nation at risk" due to the unacceptable levels of student academic performance. This decade closed with the dramatic convening of a national summit on education by President Bush and our Governors and the establishment of national education goals. But how are we to know if we are achieving our goals and doing a better job of addressing the education needs of our students? Concomitant leadership in creating and maintaining a national education statistical and informational infrastrucure is needed to fill out the blueprint of education reform.

The National Forum on Education Statistics was created in 1989 to help meet this need. An outgrowth of the National Cooperative Education Statistics System provided under Public Law 100-297, the National Forum is an organization of State and Federal agencies and national education associations responsible for collecting, reporting, and using national educational information. Their mission is to collaboratively pursue improvements in our education data system.

Over the past year, representatives of the National Forum, through the National Education Statistics Agenda Committee (NESAC), have worked hard and productively to examine the current status of national education information and to propose a set of thoughtful statistical improvement recommendations.

This first report of the National Forum on Education Statistics--*A Guide To Improving the National Education Data System*--is intended to provide broad direction regarding the types of education information that Federal and State agencies should cooperatively focus on over the next decade. The credo for this consensus document is that "Good data help to make good policies." The ultimate objective is to put into place an education information base that will provide adequate, timely, useful, accurate, and comparable data to education policymakers at all levels.

Production of this document would not have been possible without the significant contribution of a number of individuals who deserve to be recognized. First, primary credit for the quality, balance, and thoughtfulness of the final product goes to Martin Orland of the National Center for Education Statistics. In the face of much ambiguity and some apprehension about the scope of the project, Marty provided the needed content and policy guidance, as well as good judgment, to keep our committees on task and productive.

Second, there was the welcome and superlative leadership provided by key Forum representatives who contributed an extraordinary amount of time and quality thinking to the conceptualization and explication of this report. They are Joel Bloom (New Jersey), Robert Burns (Oregon), Lynn Cornett (Southern Regional Education Board) and James Phelps (Michigan).

Third, this project owes an intellectual debt of gratitude to a cadre of national expert consultants whose critical literature summaries and conceptualization of issues helped frame each of the *Guide's* substantive chapters: Roberto Fernandez, Northwestern University (student and community demographics); Andrew Porter, University of Wisconsin (school processes); Margaret Goertz, Educational Testing Service (education resources); and Leigh Burstein, UCLA (student outcomes). In addition, Rolf Blank (Council of Chief State School Officers), Joan Shoemaker (Connecticut

Department of Education), Anne Hafner and Edith McArthur (NCES), and David Stevenson (Office of Research, OERI) each made significant and important contributions to the *Guide's* development.

Fourth, Marty and I owe a special thanks to Richard Shavelson (University of California-Santa Barbara), who provided overall guidance and wisdom throughout the project, and to John Kotler whose editorial support has proven invaluable.

Finally, this effort could not have been launched, or sustained, without the leadership of Emerson Elliott, Commissioner of the National Center for Education Statistics. His vision of a national cooperative statistics system in education launched the National Forum on Education Statistics, and his unswerving commitment of staff and resources in support of this *Guide* has begun to transform that vision into reality.

It is our sincere hope that the *Guide* will stimulate Federal and State actions to address and improve the current limitations in our intergovernmental education information systems and serve as a catalyst for enhancing the quality of the Nation's education institutions.

Pascal D. Forgione, Jr., Ph.D.
Chairperson, National Education
Statistics Agenda Committee,
The National Forum on Education
Statistics, and
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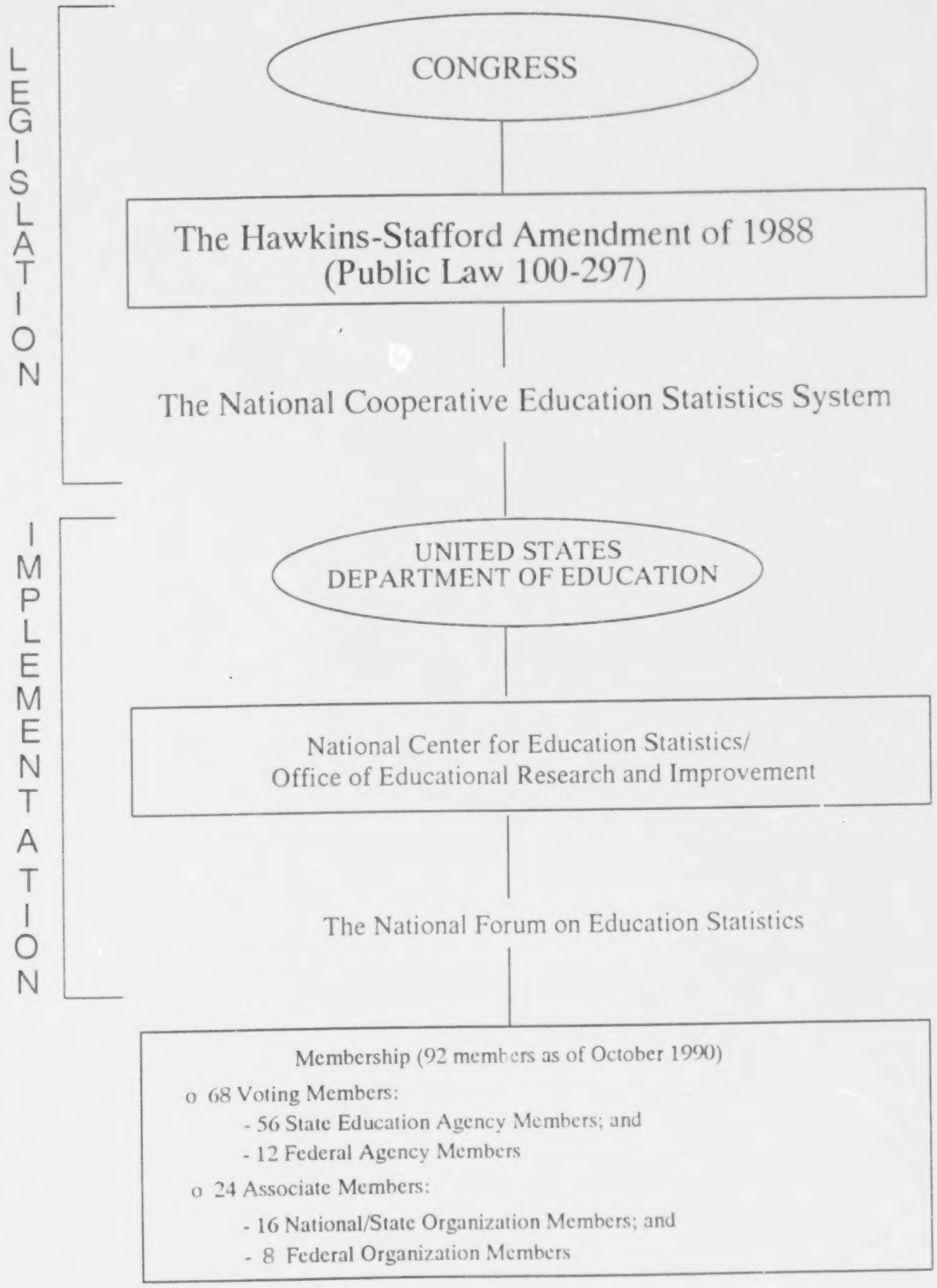
Education

OVERVIEW

NATIONAL FORUM ON EDUCATION STATISTICS



CONGRESS

The Hawkins-Stafford Amendment of 1988
(Public Law 100-297)

The National Cooperative Education Statistics System

UNITED STATES
DEPARTMENT OF EDUCATION

National Center for Education Statistics/
Office of Educational Research and Improvement

The National Forum on Education Statistics

Membership (92 members as of October 1990)

o 68 Voting Members:
    - 56 State Education Agency Members; and
    - 12 Federal Agency Members
o 24 Associate Members:
    - 16 National/State Organization Members; and
    - 8 Federal Organization Members

Acronyms Used in the *Guide*

ACYF	Administration for Children, Youth, and Families
ADA	Average Daily Attendance
ASVAB	Armed Services Vocational Aptitude Battery
CCD	Common Core of Data
CCSSO	Council of Chief State School Officers
CDC	Centers for Disease Control
CEDCARS	Cooperative Education Data Collection and Reporting Standards
CPS	Current Population Survey (Census Bureau)
ECIA	Education Consolidation and Improvement Act (includes Chapter 1 compensatory education program)
EDIP	Educational Data Improvement Project (Council of Chief State School Officers)
FRSS	Fast Response Survey System
GED	General Education Development
HS&B	High School and Beyond (Longitudinal Survey)
IAEP	International Assessment of Educational Progress
IEA	International Association for the Evaluation of Educational Achievement
IPEDS	Integrated Postsecondary Education Data System
LEA	Local Education Agency
NAEP	National Assessment of Educational Progress
NCES	National Center for Education Statistics
NELS	National Education Longitudinal Study
NESAC	National Education Statistics Agenda Committee

Acronyms Used in the *Guide* (continued)

NORC	National Opinion Research Center
NPSAS	National Postsecondary Student Aid Study
OERI	Office of Educational Research and Improvement
OSERS	Office of Special Education and Rehabilitative Services
RCG	Recent College Graduates Survey
SASS	Schools and Staffing Survey
SEA	State Education Agency
SPPE	State Per-Pupil Expenditure

A Guide To Improving the National Education Data System

Executive Summary

Good data help to make good policies! That simple credo embodies the rationale for this document--the first "product" of the newly created National Forum on Education Statistics. Prepared by the National Education Statistics Agenda Committee (NESAC) of the National Forum, the *Guide* marks a first step in fulfilling the mandate to develop and propose an agenda for improving the Nation's elementary and secondary education statistics system in order to meet the needs of education policymakers, planners, and practitioners in the 1990s and beyond.

The *Guide* examines the strengths and weaknesses of the current elementary and secondary education data system and presents recommendations for improving the system's usefulness. Much of what we say is not new. In recent years scholars, policymakers, practitioners, and others have devoted considerable attention to the question of how to improve national education data.

What is unique, and even revolutionary, about the *Guide* is that it is the product of a broad-based, consensus-building process. For the first time, representatives of State and Federal education agencies, as well as of organizations with a major interest in education data, have agreed on the types of improvements that are most important for enhancing the usefulness of the national elementary and secondary education statistical data base.

Good data help to make good policies! That simple credo embodies the rationale for this document . . . .

The Guide examines . . . the current . . . education data system and presents recommendations for improving the system's usefulness.

Despite differences in data needs and diverse constituencies, members of the National Education Statistics Agenda Committee have worked cooperatively to develop a broad agenda for action.

A useful and responsive national education data system must . . . accommodate the . . . needs of its various "education stakeholders." Thus, the Guide offers [an] . . . itinerary . . . to address important policy concerns.

A useful and responsive national education data system must, to the extent feasible, accommodate the high-priority data needs of its various "education stakeholders." Thus, the *Guide* offers a data improvement itinerary for overcoming significant limitations in the ability of the present data system to address important policy concerns. The recommendations represent destination points that the system can, and eventually should, reach.

However, there is a difference between ***establishing*** a statistical improvement agenda and ***implementing*** that agenda. Proposing an itinerary of important statistical improvement destinations, while valuable, is not the same as determining how best to reach them or even which improvements to address first.

Taking those steps will require additional research that explicitly considers the strengths and weaknesses of specific implementation strategies from such perspectives as information quality, cost, burden, and compatibility with current activities. Thus, the National Forum's next step will be to convene a special task force to develop a plan for implementing the statistical system improvements recommended in this *Guide*.

Key Principles and Precepts

To guide the National Forum toward the goal of creating a national system of high-quality, policy-relevant education statistics, the Forum developed the following key principles that define the critical characteristics of data which the system should produce. The data should:

- provide ***valid*** measures of the underlying phenomena of interest;
- provide ***reliable*** measures of the underlying phenomena of interest;
- be reported at a ***level of aggregation*** consistent with the policy questions of interest; and
- be reported in a ***timely*** fashion on a schedule that is consistent with decisionmaking calendars.

The National Forum also developed the following five ***core precepts*** governing the creation of this statistical improvement *Guide*:

1. to focus on the high-priority information needs of education policymakers;
2. to focus on questions of what and why rather than how;
3. to focus, initially, on education descriptors and indicators;
4. to focus on four specific data domains--background/demographics, education resources, school processes, and student outcomes; and
5. to focus on issues of data validity, reliability, level of aggregation, and timeliness in identifying current system limitations.

The National Forum . . . developed the following key principles [and] . . . core precepts . . . .

Organization of the *Guide*

The *Guide* examines the nature and adequacy of national data in the ***four major domains*** of background/demographics, education resources,

The Guide examines . . . national data in the four major domains of background/demographics, education resources, school processes, and student outcomes.

school processes, and student outcomes. For each domain, the *Guide*:

- discusses the potential importance of the data for policy purposes, including the particular questions that should be informed by such data;
- discusses the nature and limitations of current national collections and reports;
- discusses potential strategies for improvement; and
- summarizes specific data improvement recommendations.

Rationale and Important Recommendations by Data Domain

The following sections of this summary explain the rationale for requesting data in each of the four major domains included in this study and list the specific statistical improvement recommendations that grew out of the analysis of each data domain.

I. Student and Community Background Statistics

To be truly useful, a national education statistics system must . . . provide data on the demographic or background "inputs" that are likely to affect the condition and performance of the Nation's schools.

To be truly useful, a national education statistics system must go beyond collecting data about the education system itself. The statistics system must also provide data on the demographic or background "inputs" that are likely to affect the condition and performance of the Nation's schools. The policy questions concerning demographic statistics have a number of important implications for data collection and reporting.

At the most fundamental level, policymakers must have the information they need to discern broad trends and patterns in key demographic characteristics of students, families, and school communities.

Given the mobility of student populations and the frequent changes in their circumstances, data on such characteristics should be collected often and reported with regularity.

In addition, accurate, reliable, and comparable data are needed to allocate resources fairly. When jurisdictions employ idiosyncratic definitions of student characteristics such as race, income, and attendance that are used in allocating education program funds, the integrity and fairness of the programs and their funding systems are compromised. Thus, whenever demographic data are used to allocate program funds, it is especially important that definitions be consistent and uniformly applied.

Finally, since demographic data are likely to be related to other data in many types of analyses, policymakers should be able to look at variables of interest by demographic subgroup, particularly in addressing questions of equity. Whether a policy question focuses on individuals (e.g., Are students receiving instruction from "qualified" teachers?) or aggregates (e.g., Are schools and districts employing appropriately "qualified" instructors?), it is relevant to ask whether the findings are consistent for all racial/ethnic groups and social classes.

Whether a policy question focuses on individuals . . . or aggregates . . . , it is relevant to ask whether the findings are consistent for all racial/ethnic groups and social classes.

Recommendations. The National Forum makes the following seven recommendations for improving data collection and reporting in the domain of ***student and community background statistics***:

1. Using data extracted from State administrative record systems on the universe of public school students, the National Center for Education Statistics (NCES) should annually collect and report State- and national-level aggregates on the following student background characteristics:

   - Fall membership counts by race/ethnicity by grade; and
   - Fall membership counts by sex by grade.

2. NCES should annually report State- and national-aggregate statistics collected by other agencies on the following student subgroups:

   - Handicapped students served, by type of handicap;
   - Free-lunch participants; and
   - Participants in compensatory, bilingual, and vocational education programs.

3. NCES, in cooperation with other Federal and State agencies, should work toward the regular collection and reporting of the following State and national student background statistics:

   - Limited-English-proficiency status;
   - Student handicapping conditions by race;
   - Participation in prekindergarten education programs;
   - Student health status (e.g., nutrition, health-related absenteeism, and drug and alcohol use); and
   - Student mobility and migrant status.

4. The Office of Educational Research and Improvement (OERI) should fund special studies investigating the efficacy of using free-lunch data as proxies for student socioeconomic status (SES) and the costs, benefits, and burdens associated with regularly collecting and reporting alternative SES measures. These studies should specifically examine issues of validity, reliability, and usefulness of free-lunch and alternative measures for different types of reporting and analysis as well as administrative issues related to the collection and reporting of such measures.

NCES should develop the capacity to collect and report data on private school student background characteristics that are parallel to those being developed for the universe of public school students.

5. NCES should develop the capacity to collect and report data on private school student background characteristics that are parallel to those being developed for the universe of public school students. Data might come from the NCES Private School Survey and the Schools and Staffing Survey, and they should be reported as national aggregates and, to the extent feasible, State aggregates.

6. In reporting measures of education resources, school processes, and student outcomes from its sample and universe surveys, NCES should attempt, to the extent feasible and appropriate, to provide disaggregated data using the following student and community background characteristics:
   - Sex;
   - Racial/ethnic-group affiliation;
   - Limited-English-proficiency status;
   - Community wealth; and
   - Family income.
7. NCES should consider reporting distributional patterns for the following student and community background variables in conjunction with particular resource, process, and outcome measures:
   - Public/private school enrollment;
   - Student employment status;
   - Measures of family background (e.g., parents' education, language spoken in the home);
   - Student mobility; and
   - Student handicapping condition.

II. Education Resource Statistics

Education resources include both ***fiscal resources*** and ***human and nonhuman resources***. States--and school districts within States--have varying ***amounts*** of money available to them, ***governmental levels*** providing funds (e.g., Federal, State, intermediate, and local), and ***funding sources*** (taxation, aid, and nontax revenues). In recent years, education policymakers and the public have shown a growing concern about how education resources are allocated and what the relationship is between education spending and student achievement. Such concerns focus on five key questions:

In recent years, education policymakers and the public have shown a growing concern about . . . the relationship . . . between education spending and student achievement.

1. What is the total amount spent on elementary and secondary education at the national, State, and local levels?

2. What percentage of that amount comes from each source of revenue (Federal, State, intermediate, local, and private)?
3. What do education dollars buy at the national, State, and local levels?
4. How are education resources distributed among the States and school districts?
5. How do States allocate education resources given differences in levels of student need, fiscal capacity, and cost?

The Federal Government already collects most of the data needed to address these major education resource policy questions . . . . Thus, some of the recommendations . . . would require enhancements or improvements . . . rather than new data collections.

The Federal Government already collects most of the data needed to address these major education resource policy questions, at least for reporting at the national and State levels of aggregation. The redesign of the NCES Common Core of Data (CCD) has resulted in the creation of the new "National Public Education Financial Survey," which provides the most comprehensive and detailed data on education revenues and expenditures that have ever been available. Thus, some of the recommendations for this domain would require enhancements or improvements in current data collections rather than new collections.

In other resource areas, much developmental work and examination of alternative strategies will be necessary before implementation can proceed. For example, economists have developed a variety of techniques for adjusting resource costs across States and over time (a major improvement recommendation in this domain). Each model has its strengths and weaknesses; each is appropriate for some purposes more than others; and each carries with it different cost and burden implications. Thus, considerable work is still needed before the National Forum can recommend implementing specific nationally adjusted education resource figures.

Considerable work is still needed before the National Forum can recommend implementing specific nationally adjusted education resource figures.

Recommendations. The National Forum makes the following 12 recommendations for improving data collection and reporting in the domain of ***education resource statistics***:

1. The National Center for Education Statistics (NCES) should collect and report a set of national- and State-level education revenue, expenditure, and human resource measures on an annual basis, using data items from the "National Public Education Financial Survey" and the Common Core of Data (CCD) Nonfiscal Surveys.

2. NCES should continue to provide training and technical support to States to "crosswalk" data elements specified by the current CCD Financial Survey as well as other assistance necessary for meeting the Handbook 2R2 classifications.

3. NCES and other Federal agencies should investigate the feasibility of developing a State-by-State statistical measure to adjust education resource data for differences among States and to report education resource trends over time in constant dollars.

4. NCES and other Federal agencies should investigate the feasibility of developing a State-by-State statistical measure to adjust salary data for differences among States and to report education salary trends over time in constant dollars.

NCES and other Federal agencies should investigate the feasibility of . . . a . . . statistical measure to adjust education resource data for differences among States . . . .

5. NCES and other Federal agencies should engage in research and development efforts that will enable them to make accurate, comparable, and informative international comparisons of U.S. education resource commitments with those of other industrialized nations.

6. NCES should continue to collect and report data from the CCD aggregated to the State level on an annual basis. However, NCES should, over time, develop policies and procedures for the regular collection and reporting of district-level resource data. In moving toward district-level resource collections, NCES should be particularly cognizant of

(1) identifying potential reports that such data could generate and (2) the capacity of States to provide district-level data.

7. NCES should expand the annual CCD "State Administrative Records Survey" to include: (1) an average teacher salary measure that takes into account contract, career ladder, and other special-incentive pay and (2) a teacher salary measure that takes into account degree status and experience.

NCES should make a long-term commitment to establishing a program- and functionally based accounting system.

8. NCES should make a long-term commitment to establishing a program- and functionally based accounting system. This will provide NCES, policy analysts, and other education researchers with better information about how education funds are spent and make it possible to relate program resources to the specific education needs of students. The particular program levels to be collected should be determined after additional study, taking into account the costs and burdens associated with the development of comparable definitions of relevant program categories across different locales.

9. NCES should expand the Federal Government's survey of private schools to include resource information. Wherever feasible, NCES should report private-school resource data from its surveys on a State-by-State basis.

10. NCES should establish, as a long-term objective, the collection of data regarding the status of buildings, including the number, age, condition, and facility needs of the Nation's schools.

NCES should regularly report data on the number and descriptive characteristics . . . of instructional, instructional support, and noninstructional staff in the Nation's schools.

11. NCES should regularly report data on the number and descriptive characteristics (i.e., age, sex, race) of instructional, instructional support, and noninstructional staff in the Nation's schools. Such data should be reported at the State level to the extent feasible.

12. NCES should establish, as a long-term objective, measures that indicate total dollar investments in education personnel. These measures should be specific to different types of staff (e.g., teachers, administrators, instructional aides) and include both direct compensation expenditures (salaries) and indirect compensation (fringe benefits).

III. School Process Statistics

School process measures address questions such as who provides classroom instruction? what is being taught (and how well)? and what are the characteristics of the teaching and learning environment? It is the view of the National Forum that ***school process measures constitute a necessary and important component*** for monitoring the condition of education; informing education policy at the national, State, and local levels; and providing better mechanisms for accountability.

For the policymaker, there are three purposes for regular collection and reporting of school process measures. First, process measures can ***describe instructional practice*** and, with this, the degree to which quality education opportunities are available to all students in all schools.

School process measures . . . can describe instructional practice . . . monitor reform . . . [and] help to explain discrepancies in education performance . . . .

Second, process measures can ***monitor reform***--the degree to which recommended changes in education practice are actually being implemented. Education in the United States is periodically subject to reform efforts that call for substantial changes in current practice, including changes in curriculum emphasis, organizational structure, and teaching techniques. Monitoring these reforms requires a regular system of indicators.

If student outcomes are improving more in one State than in another, knowledge of differences in curricula, instruction, and school organization can provide . . . clues to explain these differences and point . . . toward promising future policy directions.

Finally, process measures can ***help to explain discrepancies in education performance*** and point to reasons why student achievement may vary across locales and over time. For example, if student outcomes are improving more in one State than in another, knowledge of differences in curricula, instruction, and school organization can provide policymakers with clues to explain these differences and point them toward promising future policy directions.

We have divided our analysis of school process data into the following three interrelated sub-domains that, taken together, comprise the context of instructional practice:

- ***implemented curriculum***--including what is actually taught in classrooms: content and topic coverage, time and emphasis devoted to subject areas, course taking, and the context in which instruction occurs;
- ***teaching quality***--including professional preparation, use of appropriate instructional strategies, acceptance of responsibility for student success and failure, and certification in assigned subject field; and
- ***school environment***--including academic emphasis, school size and structure, curriculum offerings, discipline, staff development, and availability of high-technology equipment (e.g., computers).

[NCES] should . . . report national and comparable State-level data on student enrollment in academic and vocational secondary courses by race/ethnicity, sex, and other demographic subgroups . . . .

Recommendations. The National Forum makes the following six recommendations for improving data collection and reporting in the domain of ***school process statistics***:

1. The National Center for Education Statistics (NCES) should regularly collect and report national and comparable State-level data on student enrollment in academic and vocational secondary courses by race/ethnicity, sex, and other demographic subgroups as feasible and appropriate. To accomplish this, NCES must first develop procedures for ensuring the collection of broadly comparable data across States on secondary-school course offerings. The Office of Educational Research and Improvement (OERI)[1] should also determine the usefulness of collecting State-level data on time allocated to subjects in the elementary grades (such as that

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[1] The Office of Educational Research and Improvement is part of the U.S. Department of Education.

currently collected in the Schools and Staffing Survey [SASS] of NCES).

2. NCES should regularly collect and report data at the national level on broad indicators of teacher preparation (e.g., certification status, number of courses taken in teaching area, major field, and preservice and inservice development and training experiences) by specific teaching assignment. Trends on these measures should be related directly to changes in the size of the teacher work force as well as student enrollment patterns (i.e., teacher supply and demand). In addition, NCES should investigate the feasibility of regularly collecting and reporting comparable State-by-State statistics using such measures and of reporting on the numbers of new teachers certified via "alternative" routes.

3. NCES should regularly collect and report data at the national level on student "opportunities to learn" specific instructional topics. Work should begin first on the high-priority subjects included in the national education goals (English, mathematics, science, history, and geography) and then proceed to other subjects. OERI should develop new measures of the depth and breadth of coverage for these topics for possible future collection and reporting at the national and State levels.

4. NCES should regularly collect and report nationally representative data on the school environment including school-level measures of academic emphasis (e.g., curricular offerings and enrollments) and decisionmaking practices. To the extent feasible, NCES should relate such data to important background characteristics of students attending these schools (e.g., sex, race/ethnicity, handicapping condition, socioeconomic status) as well as to key demographic characteristics of the larger school community.

5. In order to measure progress in meeting the national goal of "safe, disciplined, and drug-free schools" (goal No. 6 adopted by the Nation's Governors and the President), NCES or other Federal agencies should regularly collect and report national- and State-level data on drug and alcohol use and violence in the schools, as well as on policies and programs undertaken to prevent such occurrences. To develop measures of these, NCES should proceed immediately to examine the feasibility of augmenting its current sample surveys (e.g., SASS), mounting a new survey (e.g., using the Fast Response Survey System), or working in concert with other agencies concerned with these issues (e.g., Centers for Disease Control, Drug Enforcement

NCES should regularly collect and report data . . . on . . . teacher preparation . . . student "opportunities to learn" . . . the school environment . . . [and] progress in meeting the national goal of "safe, disciplined, and drug-free schools" . . . .

Agency). To the extent feasible, these data should be related to the background characteristics of students and their home communities.

OERI should fund special studies to improve the measurement of important school processes . . . .

6. OERI should fund special studies to improve the measurement of important school processes including academic emphasis, subject-specific instructional strategies, depth and breadth of content coverage, the use of new technologies in instructional programs (e.g., personal computers), and methods of training teachers and assessing their competence. Newly developed measures created through such special studies may eventually be incorporated into future regular national collections and reports.

IV. Student Outcome Statistics

In past years, parents, legislators, Governors, and leaders of business and industry frequently asked questions such as, "How are our education dollars being spent?" Today, the question is more likely to be, "What is the result of spending our education dollars?" The Nation's citizens and policymakers increasingly demand information about the results--the outcomes--of schooling.

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The types of information sought by policymakers about student education outcomes are reflected in the following questions:

- What do our students know? Do they know as much as students in other States and countries?
- How many of our students complete high school? How many drop out? How do our graduation and dropout rates compare with those of other States and the Nation as a whole?
- What do students do after high school? How many attend postsecondary institutions? How many enter the military? How many enter the job market? How satisfied are they with their schooling experience?

- Are achievement levels, completion rates, attitudes about schooling, and the postsecondary-education enrollment and employment status of our students improving, staying the same, or declining over time?

These questions reflect the Nation's growing concern about what students learn throughout their K-12 education and whether students are being prepared for the transition to postsecondary education, employment, and adulthood as responsible and productive citizens. The questions also illustrate the need for accurate information that policymakers can use in making decisions about allocating new education resources or reallocating existing ones; continuing current programs or developing new ones; and developing or revising policies, rules, and regulations.

Because States have the primary responsibility for education, it is important that they be able to assess and compare their progress toward meeting important national goals such as those established by the Governors and the President at the 1989 education summit.

It is important that [States] be able to assess and compare their progress toward meeting important national goals such as those established . . . at the 1989 education summit.

Valid, comparable student outcome measures will improve public understanding of the condition of education and may help mobilize public interest in and support for the Nation's schools. Conversely, the inappropriate collection and reporting of such measures may result in data that are not truly comparable and that do not reflect how schools are doing and what students are achieving.

We recommend that outcome measures be gathered and regularly reported in four distinct areas: student achievement, student participation and progression, student status after high school, and student attitudes and aspirations. In addition, all outcome measures should be reported by race/ethnicity and sex in order to shed light on disparities in education achievement among important subgroups of the population.

Recommendations. The National Forum makes the following 11 recommendations for improving data collection and reporting in the domain of ***student outcome statistics*** across the four key sub-domains:

Student Achievement

Comparable and uniform student achievement measures . . . should provide State-by-State comparisons of knowledge in core content areas (reading, writing, mathematics, science, history, and geography) in grades 4, 8, and 12 . . . .

1. Comparable and uniform student achievement measures (using the State National Assessment of Educational Progress [State-NAEP],[2] if proven valid and reliable) should provide State-by-State comparisons of knowledge in core content areas (reading, writing, mathematics, science, history, and geography) in grades 4, 8, and 12 at least once every 4 years. Knowledge in other subject areas such as literature, music, art, computer applications, and civics should also be periodically assessed to the extent feasible.

2. Differences in performance among important subgroups of students should be examined and reported at the national and State levels. Subgroups should include those traditionally associated with sex, race and ethnic origin, economic status, and language status. Provision should be made for States, if they wish, to analyze the sample of the student achievement study in their States so that comparisons could be made among education units by significant subgroups.

3. Trends in student performance over time should be reported for all grades and subjects in which the achievement data are collected at the national and State levels. However, reporting trends over time should not restrict the development and use of new assessment forms that tap a broader range of student proficiencies than those typically associated with "paper and pencil" tests.

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[2] State component of the National Assessment of Educational Progress.

4. The Office of Educational Research and Improvement (OERI), including the NAEP program, should give priority to research, development, and experimentation with new assessment techniques that can provide broader and more sophisticated measures of student performance.

5. State-by-State student achievement measures should include, in each administration, a performance assessment component(s). OERI should enter into cooperative research and development arrangements with State and local large-scale assessment programs.

6. Student achievement results should be scaled in a way that allows comparisons with international achievement measures such as those from the International Assessment of Educational Progress (IAEP) and the International Association for the Evaluation of Educational Achievement (IEA). Comparisons with international achievement measures should be made on a regular basis in order to monitor progress in meeting the recently developed national education goal adopted by the Governors and the President.

Student achievement results should be scaled in a way that allows comparisons with international achievement measures . . . .

7. Information should be collected on courses of study completed at the time of national and State student achievement assessments so that links might be made between courses/curricula completed and assessment results.

8. Discussion should continue into possible linkages of specific features of the National Assessment of Educational Progress (NAEP) and the National Education Longitudinal Study (NELS) survey instruments as well as better coordination of the two surveys by the National Center for Education Statistics (NCES). One possibility is to equate the NELS achievement instruments to the NAEP items.

Student Participation and Progression

9. NCES, in cooperation with State departments of education, should obtain and periodically report comparable State-by-State data on school dropouts and completers by race/ethnicity, sex, and other important subgroups. The specific measures calculated should include:

   - An annual dropout rate as defined in the NCES Dropout Field Test or as modified by the results of the field test;

- A synthetic cumulative dropout rate; and
- A school completion rate incorporating, to the extent feasible, the recommendations of the Council of Chief State School Officers (CCSSO) School Completion Task Force.

Student Status After High School

10. NCES, in cooperation with other Federal agencies and State departments of education, should investigate the feasibility of obtaining and periodically reporting comparable State-by-State data on the following subjects by race/ethnicity, sex, and other important subgroups:

    - The percentage of high school graduates who enroll in different types of postsecondary institutions within a year of graduation;
    - The percentage of high school graduates who enter the military within a year of graduation;
    - The percentage of high school graduates who enter the civilian labor force within a year of graduation; and
    - The percentage of high school graduates in the civilian labor force who are employed/not employed one year after graduation.

NCES . . . should investigate the feasibility of obtaining and . . . reporting comparable State-by-State data on . . . the percentage of high school graduates who enroll in different types of postsecondary institutions . . . .

Student Attitudes and Aspirations

11. OERI should fund special studies related to the regular collection and reporting of data on student attitudes toward education and schooling and their future aspirations. These studies should investigate both the technical validity and reliability of potential statistics of this type and their perceived usefulness for purposes of education policymaking and planning.

Expectations and Future Actions

The 36 recommendations contained in the *Guide* provide an ambitious but essential initial blueprint for reform of the national elementary and secondary education data collection and reporting system. Implementing these improvements would substantially alter the landscape of this system.

It is important to make several points about the potential impact of the recommendations. First, many of the recommendations can be implemented ***through enhancements or modifications of existing surveys*** rather than through new data collections. In these cases, implementation is likely to be more feasible and less costly than might otherwise be true. The tables that accompany this document identify the specific agencies and national surveys that may be affected by implementing the recommendations contained in the *Guide*.

Many of the [Guide's] recommendations can be implemented through enhancements or modifications of existing surveys rather than through new data collections.

Second, a basic ***data system infrastructure*** is being created through the National Cooperative Education Statistics System for implementing many of the statistical improvements we contemplate. Third, there appears to be a reasonable ***balance of burdens*** between the States and the Federal Government associated with implementing the recommended improvements.

Finally, although some recommendations can be acted upon relatively quickly, others will ***require considerable time***.

What are our expectations for this document? First and foremost, we expect that the *Guide* will ***begin a systematic process of national reform in education statistics***. Specifically, we expect that:

We expect that the Guide will begin a systematic process of national reform in education statistics.

- all members and associates of the National Forum will commit their constituent organizations to investigating the possibility of making the improvements necessary to meet the objectives outlined in the data improvement recommendations;

The National Forum will develop a strategic plan for implementing the recommendations based on the results of these discussions.

- this guide will serve as a basis for subsequent interchanges among members of the National Forum and relevant agency(ies) at the Federal, State, and local levels on strategies for implementing these recommendations; and
- the National Forum will develop a ***strategic plan*** for implementing the recommendations based on the results of these discussions.

Our expectations for this report are ambitious. We believe that the broad-based, consensus-building approach by which the report was developed gives credence to its recommendations. We anticipate that those who develop and implement education statistical policies will find this improvement agenda useful and will take the agenda seriously. We hope they believe, as we do, that creating a national education data system based on a spirit of cooperation and consensus building will result in the highest quality data, superior policymaking, and, ultimately, a more effective and efficient education system.

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Student and Community Background Statistics

(Appearing on Pages 105-107 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational Longitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
State and national fall enrollment counts by grade, by race and sex	School/District and State Nonfiscal Surveys								xx
State and national "special needs" student counts	School/District and State Nonfiscal Surveys					OSERS OESE OVAE OPBE	FNS		
Development of new State and national aggregate student counts						OSERS OPBE OBEMLA OME OCR	ACYF Census CDC	Counts of: LEP, Handicap by Race, Pre-K, "At Risk," Student Mobility	xx
Improved socio-economic status measures							Census FNS	Free-lunch Counts and Potential Alternatives	
Private school student background characteristics	Private School Survey	Private School Component							
Analysis of education data by sex, race, LEP status, wealth & income	All Components	All Components	All Components	All Components	All Collections	OBEMLA OCR OPBE	Census BLS		

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

ACYF = Administration for Children, Youth, and Families, Department of Health and Human Services

BLS = Bureau of Labor Statistics, Department of Labor

CDC = Centers for Disease Control, Department of Health and Human Services

Census = Bureau of the Census, Department of Commerce

FNS = Food and Nutrition Service, Department of Agriculture

NCES = National Center for Education Statistics

OBEMLA = Office of Bilingual Education and Minority Language Affairs

OCR = Office for Civil Rights

OESE = Office of Elementary and Secondary Education

OME = Office of Migrant Education

OPBE = Office of Planning, Budget, and Evaluation

OSERS = Office of Special Education and Rehabilitative Services

OVAE = Office of Vocational and Adult Education

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Student and Community Background Statistics (continued)

(Appearing on Pages 105–107 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational Longitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Analysis of education data by other selected background characteristics	All Components	All Components	All Components	All Components	All Collections	OSERS OME OPBE	Census BLS		

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

BLS = Bureau of Labor Statistics, Department of Labor

Census = Bureau of the Census, Department of Commerce

NCES = National Center for Education Statistics

OME = Office of Migrant Education

OPBE = Office of Planning, Budget, and Evaluation

OSERS = Office of Special Education and Rehabilitative Services

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Education Resource Statistics

(Appearing on Pages 108–110 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational Longitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Revenues, expenditures, and human resources aggregate data	Fiscal and Nonfiscal Surveys								xx
Training & support for fiscal crosswalk and fiscal redesign	Fiscal Survey								
State resource cost adjuster								State Resource Cost Adjuster	
State salary cost adjuster								State Salary Cost Adjuster	
International cost of education comparisons						OPBE	Census	International Cost of Education Comparisons	
District level finance collections	Fiscal Survey						Census	Local Fiscal Collection	xx

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

Census = Bureau of the Census, Department of Commerce

NCES = National Center for Education Statistics

OPBE = Office of Planning, Budget, and Evaluation

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Education Resource Statistics (continued)

(Appearing on Pages 108-110 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational Longitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Teacher salary	Fiscal Survey								xx
Program accounting system								Program Accounting	
Private school resource information	Private School Component								
School facilities data								Facilities Data Collection	xx
Numbers and characteristics of school staff	School/District and State Nonfiscal Surveys								xx
Fiscal investments in personnel								Fiscal Investment in Education Personnel	xx

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

NCES = National Center for Education Statistics

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: School Process Statistics

(Appearing on Pages 111-112 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational Longitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Course enrollments	State Nonfiscal Survey	Teacher Components District/School Components					NSF	Academic and Vocational Coursetaking	xx
Teacher preparation and teacher supply and demand	State Nonfiscal Survey	School/District Components Teacher Components					NSF	Teacher Preparation Teacher Supply and Demand	xx
Topic/content coverage and opportunity to learn		Teacher Components	Teacher Components					Topic/Content Coverage Opportunity to Learn	
School environment		Public and Private School Components	School Components						
Drug/alcohol use and school violence		School Components			Fast Response Survey System (FRSS)	OPBE	CDC DEA	Drug/Alcohol Use School Violence	
Research and development on school process measures								Improved School Process Measures	

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

CDC = Centers for Disease Control, Department of Health and Human Services
DEA = Drug Enforcement Administration, Department of Justice
NCES = National Center for Education Statistics
NSF = National Science Foundation
OPBE = Office of Planning, Budget, and Evaluation

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Student Outcome Statistics

(Appearing on Pages 113-115 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational ongitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Student achievement by State				Student Components**					xx
Subgroup differences in student achievement				Student/Teacher and School Components					xx
Trends in student achievement				Student/Teacher and School Components					
Research and development in student achievement measures								More Sophisticated Student Outcome Measures	
Performance assessment				Student Components				Performance Assessment	
International comparisons				Student Components	IAEP/IEA				

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

** = If proven valid and reliable

IAEP = International Assessment of Educational Progress

NCES = National Center for Education Statistics

IEA = International Association for the Evaluation of Educational Achievement

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Student Outcome Statistics (continued)

(Appearing on Pages 113–115 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational ongitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Course enrollment/ achievement linkages				Student/Teacher and School Components					
NAEP/NELS linkages								NAEP/NELS Linkages	
High school dropouts and completers	School/District and State Nonfiscal Surveys								xx
Postsecondary educational experiences	School/District and State Nonfiscal Surveys				Integrated Postsecondary Education Data System		BLS Department of Defense		xx
Student attitudes/ aspirations								Student Attitudes/ Aspirations	

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

BLS = Bureau of Labor Statistics, Department of Labor

NCES = National Center for Education Statistics

Chapter 1

Introduction

Introduction

Good data help to make good policies! That simple credo embodies the rationale for this document--the first "product" of the newly created National Forum on Education Statistics. Prepared by the Forum's National Education Statistics Agenda Committee (NESAC), the *Guide To Improving the National Education Data System* is the first step in fulfilling our mandate to develop and propose, cooperatively, an agenda for improving our national statistical system in education in order to better meet the needs of education policymakers and planners in this decade and beyond.

The purpose of the *Guide* is to present arguments and recommendations for improving the usefulness of data derived from national education statistical collections and reports. Much of the *Guide's* content is not new. As recognition of the need to improve national education performance has grown in recent years, scholars, policymakers, and practitioners have devoted considerable attention to the question of how to improve national data systems in order to provide a better assessment of current education conditions, identify areas of concern, and monitor education progress. Many of their findings and views have been included in the *Guide*, and we have engaged some of these individuals as special consultants to this project.

What is unique, and even revolutionary, about this effort is that it is the product of a broad-based, consensus-building process among key officials in the education policy community. For the first time, representatives of State and Federal education agencies and of organizations with a major interest in education data have, after due deliberation, agreed on the most important types of improvements that are needed to enhance the usefulness of the national statistical data base. Despite the differences in our data needs and the diverse constituencies we represent, we have jointly and cooperatively developed a broad agenda for action as a first step toward implementing statistical policy reforms. This is a considerable achievement, one that we think lends weight to the recommendations offered.

One can think of the *Guide* as a "data improvement itinerary" that grew out of our efforts to identify significant limitations in the ability of the current system to meet important policy concerns. The recommendations for improvement represent the desired "destination points" on the itinerary; that is, we have recommended adding important types of information that we believe the system can, and eventually should, provide.

Even though this improvement agenda is relatively long (we make 36 specific recommendations for improving the system), it is ***not*** a "laundry list" of every piece of data that our technology is capable of providing. On the contrary, the lengthy consensus-building process undertaken in developing this document was built upon explicit ***policy information needs*** expressed by national education data users and providers--needs that are not being fully met by the current data system.

The breadth of the recommendations contained in the *Guide* reflects the diversity of constituencies that rely on education data and the different purposes for which they use the data. Thus, different constituencies have disparate system improvement concerns. A useful and responsive national education data system must, to the extent feasible, accommodate all the high-priority data needs of its various "education stakeholder" constituencies. The *Guide* represents a necessary and important first step on the road to a more broadly responsive national education data system.

At the same time, we recognize the difference between ***setting*** and ***implementing*** a statistical improvement agenda. An itinerary is not a plan. Presenting an agenda of important statistical improvement destinations, while valuable, is not the same as determining ***how*** best to reach them or even which improvements to address first. To do this requires additional research that explicitly considers the strengths and weaknesses of specific implementation strategies from such perspectives as information quality, cost, burden, and compatibility with current activities. Thus, we believe that the cooperative development of a ***strategic plan*** for statistical improvement, based on the *Guide*, should constitute the National Forum's next step in the system improvement process.

The cooperative decisionmaking model that shaped the *Guide* and informs other activities of the National Forum reflects the spirit of the National Cooperative Education Statistics System (Cooperative System) created by the Hawkins-Stafford Education Improvement Amendments of 1988 (P.L. 100-297). Our committee, and the National Forum, have been given a mandate to implement an ongoing cooperative statistics system in education. Composed of Federal and State policymakers who collect and report education statistics, as well as representatives of associations and interest groups that are among the key providers and consumers of such data, the National Forum attempts to foster discussion and consensus on issues concerning statistical policy in education.

The time is particularly ripe for this agenda-setting enterprise. Policymakers at all levels are beginning to define measurable education performance goals and to think seriously about the data systems that will be needed to monitor progress toward attaining these goals. However, experience has taught us that useful education data systems cannot be created through administrative fiat. Developing such systems requires the active participation and support of a diverse group of actors, data providers, and users.

The National Forum's Federal-State membership and cooperative orientation make it the ideal arena for discussing how to improve the Nation's education statistics system and for forging the broad-based support necessary for such improvements to take place. Thus, we expect the Forum to be instrumental in helping to define and implement national statistical policies in education through the cooperation and support of its members.

It is important to emphasize that the efforts of the Cooperative System, the National Forum, and this committee will be continuous and evolving. Effective and efficient data systems must adapt to new policy concerns and to the latest advances in research and technology. The *Guide* should be viewed as an initial foray into statistical agenda setting rather than as a finished product. In the future, we expect not only to research and plan implementation strategies based on the items in the *Guide* but also to define new areas for exploration and to revisit old issues based on our membership's changing needs and perspectives.

A. Background

The *Guide* has been prepared for the National Forum on Education Statistics by the National Education Statistics Agenda Committee (NESAC), one of the Forum's four standing committees. Beginning with its first meetings in March 1989, NESAC has defined its mission both within the context of the National Forum and in relation to other efforts aimed at improving Federal education statistics. The scope of NESAC's role has continued to evolve through subsequent meetings in 1989 and 1990.

Several conclusions regarding the nature of this mission require elaboration because they have helped shape the orientation, tone, and perspective of the *Guide*. A conceptual framework describing our perceptions of how national education data can be used to inform and improve the policymaking process appears in the following section. This framework is followed by a discussion of the key principles and precepts that have guided our work.

B. Consensus and Cooperation in a Decentralized Policy System

Collections and presentations of national statistical data about education have become increasingly prevalent in recent years. In the 1980s, we witnessed the introduction of the U.S. Secretary of Education's annual *State Education Performance Chart* (the "Wall Chart"), which ranks and compares States along several dimensions considered relevant to the education enterprise--

including pupil-teacher ratios, per-pupil expenditures, State reform policies, and achievement on college entrance examinations.

We also saw the creation and expansion of regular national data surveys by the National Center for Education Statistics (NCES) covering student and school demographics (the Common Core of Data nonfiscal surveys), schooling processes (Schools and Staffing Survey), financial resources and expenditures (the Common Core of Data fiscal survey), and student achievement (National Assessment of Educational Progress [NAEP] and the National Educational Longitudinal Survey of 1988 [NELS:88]).

The Council of Chief State School Officers (CCSSO) and the National Governors' Association have begun to publish annual reports on State education indicators and reform policies, respectively. In addition, the Council has embarked on a major effort to develop comparable indicators of course-taking patterns in mathematics and science in each of the 50 States. Finally, international comparisons along such dimensions as education spending and academic achievement have become increasingly commonplace as Americans have come to recognize the close relationship between education performance and global economic competitiveness.

Recent commitments by the President and the Nation's Governors to develop national performance goals--and measures to determine whether these goals have been attained--indicate that the thirst for more and better national education statistics will continue for the foreseeable future. One of the principal purposes of these efforts is to inform government policymakers, education "stakeholders," and the public about the condition and status of the education system. At the same time, the particular needs of these information users are critical to defining the types of data to be collected and reported.

What policy needs could be addressed by national education statistics? A model of the dynamic relationship between potential national statistics and education policy and practice appears in figure 1.

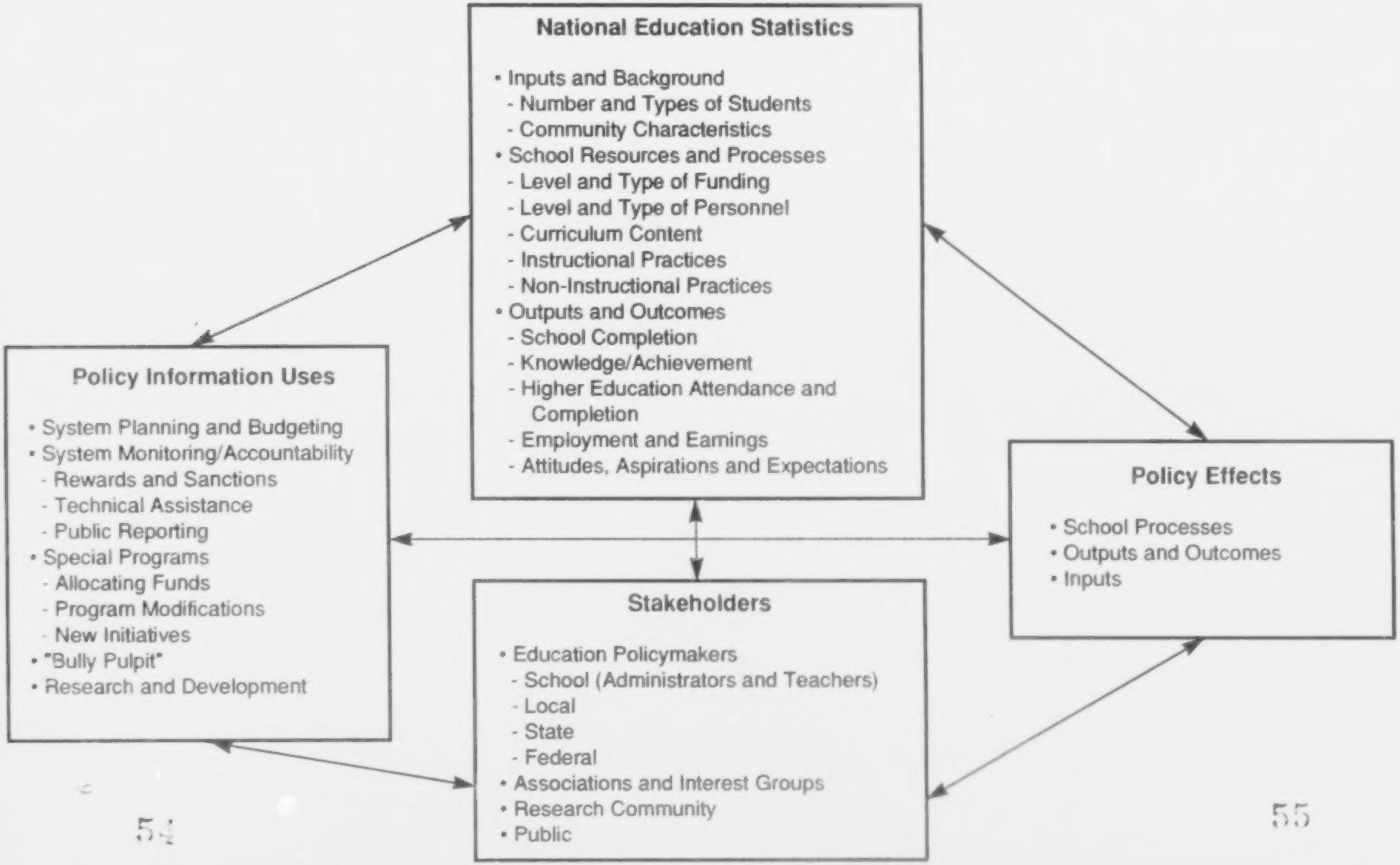
As can be seen, national education statistics could potentially provide important information for a variety of users and purposes. Federal, State, and local government officials could, for example, all use national demographic data in their program funding formulas and for determining when initiatives are required to address the special needs of changing student populations. Student achievement data could help these same officials--as well as education associations, interest groups, and the public--gauge how well students are learning and where improvement efforts should be focused.

There exists a panoply of potential data needs and diverse actors who could be informed by national education statistics and who can, in turn, help shape the nature of these statistics. However, in a decentralized and fragmented policy environment such as that existing for education, it is logical to ask how to ensure that valid and useful national data are collected and reported.

Cooperation among the different actors and governmental levels is one indispensable prerequisite for achieving this objective. Policy officials and data providers in different parts of the system need to cooperate and support one another if their own data needs are to be fulfilled. For example, Federal policy officials cannot allocate program funds equitably throughout the States and school districts without obtaining from these units comparable counts of students and dollars using uniformly applied definitions.

States and localities, in turn, often rely on the Federal Government to orchestrate and administer standardized national data collections and reports so that they can accurately compare the performance and status of their school systems with those of other States and localities. The cooperation and support of members of education associations and interest groups (such as teachers

Figure 1
RELATIONSHIPS BETWEEN NATIONAL STATISTICS ON EDUCATION AND POLICY AND PRACTICE


National Education Statistics
• Inputs and Background
- Number and Types of Students
- Community Characteristics
• School Resources and Processes
- Level and Type of Funding
- Level and Type of Personnel
- Curriculum Content
- Instructional Practices
- Non-Instructional Practices
• Outputs and Outcomes
- School Completion
- Knowledge/Achievement
- Higher Education Attendance and Completion
- Employment and Earnings
- Attitudes, Aspirations and Expectations
Policy Information Uses
• System Planning and Budgeting
• System Monitoring/Accountability
- Rewards and Sanctions
- Technical Assistance
- Public Reporting
• Special Programs
- Allocating Funds
- Program Modifications
- New Initiatives
• "Bully Pulpit"
• Research and Development
Policy Effects
• School Processes
• Outputs and Outcomes
• Inputs
Stakeholders
• Education Policymakers
- School (Administrators and Teachers)
- Local
- State
- Federal
• Associations and Interest Groups
• Research Community
• Public

and administrators) are also essential for ensuring the availability of timely and accurate statistical information. At the same time, these groups are active consumers of these data and, thus, have a substantial stake in the nature and quality of the information being provided.

It also must be recognized that the diverse set of policy officials, data providers, and concerned citizens who comprise the constituency for education statistics often have very different notions about what types of national data are most important. While State and local school officials may perceive relatively little need for international and interstate comparisons of school financing arrangements, these officials might be quite interested in data of this type that compare districts within their States. Conversely, Federal policymakers are likely to have greater interest in interstate and international school finance data than they would in detailed intrastate information.

For teachers' groups, the most valuable data would probably be on the status of their members along such dimensions as background, skill levels, salary, working conditions, attitudes toward their profession, and areas of staff shortages/excesses. By contrast, State policymaking organizations such as the Council of Chief State School Officers and the National Governors' Association, and the public, are more likely to be interested in a smaller set of broad indicators that describe critical characteristics and trends in the teaching profession.

It is this combination of data interdependency and unique data needs among the different participants in the education policy arena that makes the search for consensus on a national statistical improvement agenda so compelling. In a decentralized and fragmented policy environment, cooperation and compromise among the many data users and providers are essential to meeting the priority information needs of all parties effectively and efficiently.

In suggesting the importance of arriving at a common national statistical improvement agenda, we are not assuming a "rationalist" view of the education decisionmaking processes. We do not believe, for example, that potential users of education information always (or even frequently) sift through all available data on an issue and then take action based solely on the weight of the evidence. We are cognizant of other decisionmaking influences--politics, past practice, and personal beliefs to name but a few.

However, we feel strongly that in those instances where data are sought by policymakers or others, the likelihood that the data will be used effectively and appropriately will be governed by the timeliness, usefulness, and quality of the information available.

This is a unique and opportune moment to improve the Nation's education data system. The desire for credible, policy-relevant information on the status and performance of our education system has never been stronger. With this interest has come an increased recognition of the importance of having quality data for improving the education system, as well as some of the limitations of currently available data. The need for improved education data has also made education information users acutely aware of the need to act jointly and cooperatively in order for improvements to take place in the national data system.

Thus, the need at this moment is for leadership in creating a national statistical agenda in education that represents consensus and cooperation among a diverse set of education constituencies in order to produce high-quality, policy-relevant data. The National Forum was created for precisely that purpose.

C. Improving the National Education Data System: Key Principles and Precepts

To guide the National Forum toward the objective of creating a national system of high quality, policy-relevant education information, the Forum developed the following set of principles that define the critical characteristics of data the system produces:

1. The data should be used to provide *valid* measures of the underlying phenomena of interest.

This is not as self-evident as it may sound. The validity of data must be judged in terms of how the data are used. Many data collections purport to measure an important phenomenon (such as student achievement or education spending levels), but a close examination may reveal a measure that is seriously flawed for its intended purposes. Using minimum competency test scores to gauge the overall knowledge of students (rather than recognizing that these tests measure only a narrow range of minimum proficiencies, at best) is one example of an invalid use of a measure. Another is using information from a population "sample" (such as college-bound students in a State) to make inferences about the characteristics of a larger group that it does not adequately represent (such as ***all*** students in a State). While even the best data represent imperfect portrayals of underlying phenomena, care should be taken to ensure the maximum correspondence between the goal being measured and the data collected to inform it.

2. The data should provide *reliable* measures of the underlying phenomena of interest.

Applying nonstandard and, hence, inconsistent definitions to data across locales poses the greatest potential threat to the reliability of national statistical reports. Using inconsistent definitions leads to inaccurate national and subnational estimates and compromises the usefulness of comparisons across units. Thus, the creation of reliable national (and, where appropriate, international) data measures requires the development of standard, uniformly applied definitions of desired data elements.

3. The data should be reported at a *level of aggregation* consistent with the policy questions of interest.

Some education data users are interested mainly in reports at the national aggregate level, especially when their principal concerns are in understanding broad trends over time or making international system comparisons. However, many users are equally interested (and occasionally more interested) in statistical breakdowns by major geographic (e.g., region, State, school district) and demographic (e.g., system size/urbanicity, racial/ethnic group) subunits to address their policy needs. Reporting exclusively at high levels of aggregation (such as single national statistics on pupil enrollments, per-pupil spending, reading achievement, etc.) can mask important variability within the reported unit, resulting in the loss of potentially important information.

For example, only through the collection and reporting of student achievement data by race in the last report of the National Assessment of Educational Progress was it possible to determine that recent academic achievement trends of blacks differed substantially from that of the Nation as a whole. Sometimes, the use of disaggregated data along more than one dimension (e.g., black achievement trends by State or region) may be considered appropriate to address an important policy information need.

4. The data should be reported in a *timely* fashion on a schedule that is consistent with decisionmaking calendars.

Both the timing and timeliness of national statistical reports are relevant to their potential usefulness. The periodicity (annual, twice a decade, etc.) and recency (one-year-old data, five-year-old data, etc.) of the data reported should be governed by the information's intended uses as well as its likely volatility over time. Reporting enrollment data once every five years, for example, would not meet the needs of policymakers wishing to allocate program funds annually based on these counts. However, a five-year collection cycle might be considered appropriate for reporting on student achievement in particular sub-domains such as science and social studies, especially if scores were not expected to vary greatly over shorter intervals.

The Forum has also developed the following set of five core precepts governing the creation of this statistical improvement guide:

1. To focus on the high-priority information needs of education policymakers;
2. To focus on questions of what and why rather than how;
3. To focus initially on education descriptors and indicators;
4. To focus on specific data domains--background/ demographics, school processes, education resources, and student outcomes; and
5. To focus on issues of data validity, reliability, level of aggregation, and timeliness in identifying current system limitations.

Each precept is elaborated below.

1. To focus on the high-priority information needs of education policymakers

As emphasized earlier, this agenda for national data system improvements is driven by the questions and needs of those who establish and implement education policies at the Federal, State, and local levels. It is assumed that these individuals rely, at least in part, on national statistical data collections and reports to shape their policy decisions. The process of developing a statistical action agenda begins with identifying critical current and anticipated policy questions that could be addressed by national statistics and examining the extent to which the current national statistical system meets these needs. The recommendations for data improvement contained in the *Guide* emanate from this analysis.

The *Guide* is considerably broader in orientation and scope than other current efforts to improve selected elements of the national education data base because it seeks to respond to the information needs of such a diverse group of data providers and users. There are a number of efforts underway to address specific national data concerns, such as measuring progress in meeting the national education goals recently endorsed by the President and the Nation's Governors and developing national "indicators" of the condition of our education system.

While these efforts should be viewed as important parts of the National Forum's statistical improvement agenda, they are ***not*** synonymous with this agenda. Many, if not most, of the recommendations contained in the *Guide* are concerned with improvements in the data system requested by education policymakers that go beyond the scope of current national education goals or potential national education indicators.

2. To focus on questions of what and why rather than how

The new data agenda focuses primarily on ***what*** improvements in current national data collections and reports would be most useful to policymakers and ***why*** such changes are warranted. Yet in making these recommendations for improving the statistical system, we have ***not*** ignored issues of feasibility and burden. We believe that all the recommendations offered are technically feasible, at least in the long run. We also suggest specific implementation strategies and point out areas in which considerable developmental work is in order.

What the *Guide* does not do is endorse any particular plan of action as the most appropriate mechanism for meeting a recommendation objective. To do so would require a more thorough investigation of alternative implementation strategies and issues associated with them--including data quality, cost, burden, and current system capabilities--than has yet taken place. Once the broad improvement agenda has been adopted, we assume that developing plans for its implementation are the logical and necessary next steps in the statistical improvement process to be addressed subsequently and comprehensively by the National Forum.

3. To focus initially on education descriptors and indicators

While the National Forum may make recommendations pertaining to any aspect of national statistical policy in education, we believe that the initial focus should be on improving "stand alone" descriptive national counts and measures of important elements of the education system and broad indicators of the system's status and performance. The illustration in figure 2, taken from a report prepared by the Council of Chief State School Officers, describes six distinct purposes of a national-State education data system and points out where data may be obtained to meet these purposes. The *Guide* primarily addresses the first three purposes:

- **counting/measuring** elements of the education system (e.g., numbers and types of schools, students, dollars spent, achievement test scores);
- **describing** system dimensions (e.g., courses taken, achievement levels attained); and
- **monitoring** important trends and patterns in the other two areas, through both cross-sectional examination and over time.

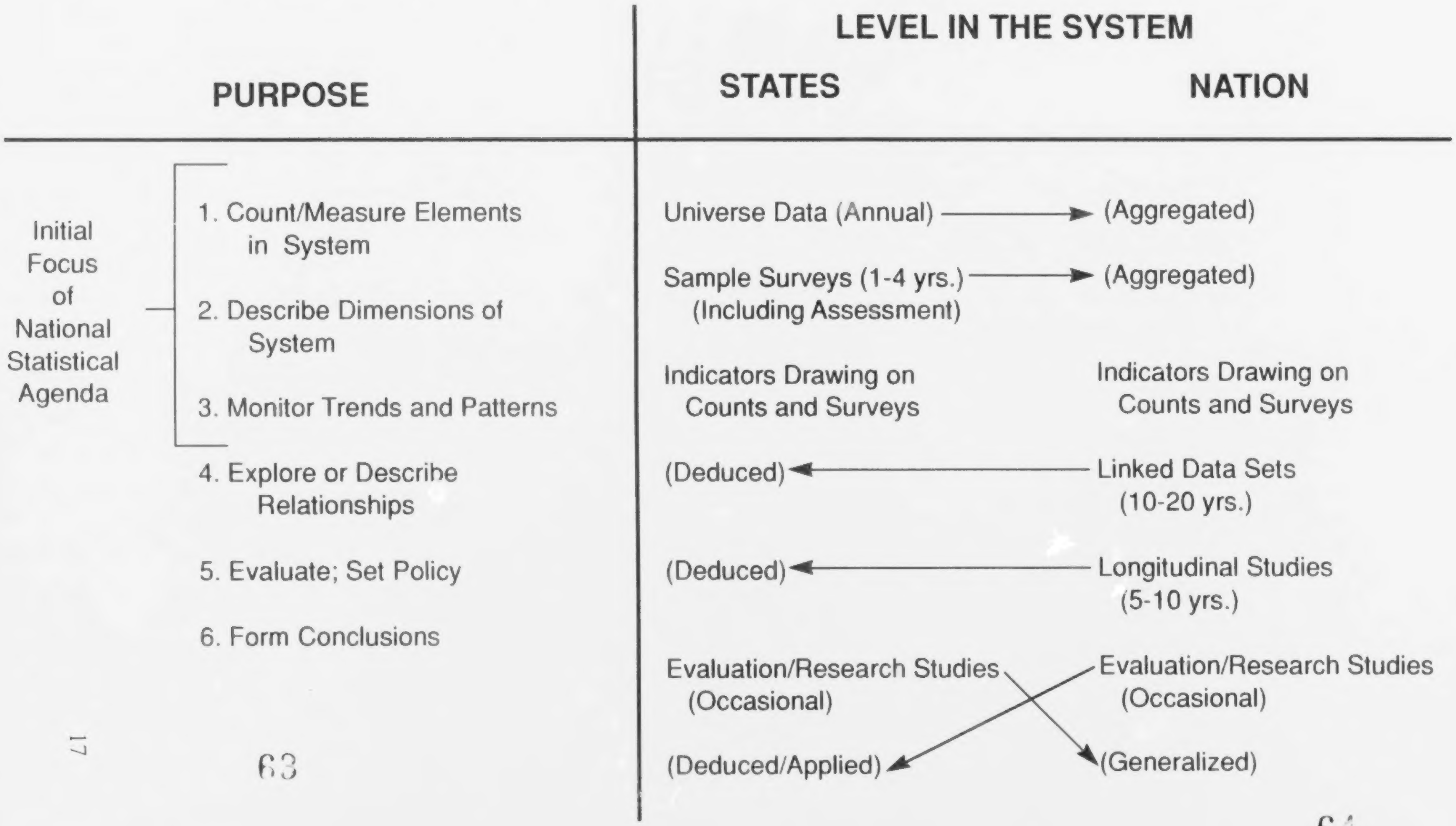
Subsequent activities of the National Forum may focus on improving the national statistical system for other purposes, such as exploring important research questions (e.g., the relationship between education achievement and future economic well-being) and evaluating the effects of special programs.

4. To focus on specific data domains

The *Guide* addresses specific domains or categories of statistical data that broadly reflect the important components of our education system. These domains provide information for understanding the context, inputs, and outcomes of education. The data domains are:

- **background/demographic data**--the background characteristics of students attending school and the communities where schools are located;
- **education resource data**--the financial and human resources available to schools;
- **school process data**--specifically curricula content, the quality of instruction, and the schooling environment;
- **student outcome data**--how well students learn and achieve both in school and later in life.

Figure 2
NATIONAL/STATE EDUCATION DATA SYSTEM
Adapted from a figure developed by the State Education Assessment Center, Council of Chief State School Officers



	PURPOSE	LEVEL IN THE SYSTEM	
		STATES	NATION
Initial Focus of National Statistical Agenda	1. Count/Measure Elements in System	Universe Data (Annual) →	(Aggregated)
	2. Describe Dimensions of System	Sample Surveys (1-4 yrs.) (Including Assessment) →	(Aggregated)
	3. Monitor Trends and Patterns	Indicators Drawing on Counts and Surveys	Indicators Drawing on Counts and Surveys
	4. Explore or Describe Relationships	(Deduced) ←	Linked Data Sets (10-20 yrs.)
	5. Evaluate; Set Policy	(Deduced) ←	Longitudinal Studies (5-10 yrs.)
	6. Form Conclusions	Evaluation/Research Studies (Occasional)	Evaluation/Research Studies (Occasional)
		(Deduced/Applied)	(Generalized)

Because the *Guide* is concerned primarily with counting/measuring and describing critical aspects of the Nation's education system, its principal objective is to examine the "stand alone" value of data within each of the above domains, not relationships among them. Sometimes, however, we will note the need to link data across domains to address specific policy concerns.

In particular, it is clear that regularly collecting and reporting background/demographic data has major policy value beyond describing the broad character of student populations along such dimensions as race, income, and English-language proficiency. This type of data is also important as a relational measure for examining how resource levels, schooling processes, and outcomes might differ for students from different family and community backgrounds. For this reason, much of the discussion of demographic data in the *Guide* concerns the appropriate breakdowns for collecting and reporting school resource, process, and outcome information.

5. To focus on issues of data validity, reliability, disaggregation, and timeliness

Finally, the *Guide* looks at the adequacy of the current national statistical system in education from the perspectives of data validity, reliability, disaggregation, and timeliness that were noted earlier. For this reason, nearly all of the recommendations for improving current statistical collections and reports would be expected to have implications for one or more of the following:

- **new national data collections** to address important policy concerns with appropriate measures;
- **improving the comparability** of existing national data reporting across important subunits;
- **creating more disaggregated reporting levels** to allow for comparisons across important geographic and demographic subunits; and
- **expanding the frequency** of current collection and reporting cycles to enhance policy relevance.

D. Organization of the Guide

The following chapters examine the nature and adequacy of national data in the four major domains--background/demographics, education resources, school processes, and student outcomes. In Chapters 2-5, we address the current and potential status of statistical measures in each of these areas of the national statistical system. The chapters are structured similarly. In each, we:

- discuss the potential importance of the data for policy purposes, including the particular questions that should be informed by such data;
- discuss the nature and limitations of current national collections and reports and potential strategies for their improvement; and
- summarize our specific improvement recommendations.

In Chapter 6, we provide a complete list of all of the recommendations contained in the *Guide*, and we discuss the National Forum's planned "next steps" in the statistical improvement process.

Chapter 2

Student and Community Background Statistics

A. Rationale and policy questions - p. 23

B. Current data collections and their limitations - p. 28

C. Recommendations for improving collection and reporting - p. 34

This chapter is based on an "idea paper" prepared for the National Forum by Dr. Roberto Fernandez of Northwestern University. The draft manuscript for the chapter was written by Dr. Martin Orland and Ms. Edith McArthur of the National Center for Education Statistics. It was prepared in cooperation with the Forum subcommittee on student and community background statistics chaired by Dr. Joel Bloom of the New Jersey Department of Education.

Student and Community Background Statistics

To be useful, national education statistics cannot be limited to data about the education system alone. The data must also provide information on relevant variables that are likely to affect the status and performance of that system; that is, there must be information on the demographic "inputs" to schooling. In this chapter we note the policy uses of student and community background data, discuss technical issues to be considered in the selection of student and community background measures, review current collections of such data, and, finally, recommend specific improvements in these national data collections and reports.

A. Rationale and Important Policy Questions

There are four major reasons why it is important to collect national-level demographic data on the characteristics of students and their communities.

- **Demographic data make other data more meaningful.** Whether policymakers are interested in data ***describing*** important characteristics of the education system or in ***assessing*** its performance, including high-quality student and community background information is often necessary to provide a meaningful context for the statistic being reported. For example, trends in such conditions as student/staff ratios and new facilities construction become more meaningful and useful when accompanied by statistics on enrollment trends. Falling pupil/staff ratios would mean something quite different to policymakers in a context of declining, rather than increasing, enrollments as would the construction of additional schools. Similarly, in assessing trends in the performance of the education system, it is also important to consider trends in relevant input characteristics (such as the socioeconomic status of students) because of their known relationships to achievement.

- **Demographic data are needed for allocating funds.** Most current Federal and State funding formulas incorporate student and/or community demographic data. These data are used to allocate funds based on the total number of pupils enrolled in the funded jurisdiction (i.e., school, school district, State) as well as on the number with identified "special needs" for purposes such as compensatory and bilingual education. Some programs also incorporate national data on community characteristics (poverty, income, urbanicity, unemployment, etc.) into their allocation formulas. Thus, policymakers have a stake in the validity and reliability of the background measures used if they wish to ensure the equitable distribution of Federal and State aid payments.

- **Demographic data are needed to gauge the efficacy of particular initiatives.** Many education policies and programs are based on implicit or explicit assumptions about the background characteristics of students and their communities. Thus, there are major potential program implications when such characteristics change over time. For example, data on potential or actual demographic/student background changes might raise the following kinds of issues for school policymakers:

    - What impact will the increasing prevalence of single-parent and two-parent-working families have upon parent involvement in schools?

    - What should be the role of the schools in providing before- and after-school care?

    - Given the recent large influx of limited-English-proficient Asians and Hispanics in some areas, how should services be targeted to meet the special educational needs of these populations?

    - What are the implications of changes in the health status of American students (on such indicators as nutrition, health-related absenteeism, and drug and alcohol use) for education and other social-service programs?

- How should schools, school districts, and States take into account changes in rates of student mobility in and out of their jurisdictions when designing their programs and services?

- **Demographic data are necessary for determining the "equity" of the education system.** Whether data are being used for assessment or descriptive purposes, demographic data are likely to be critical for addressing the broad range of policy issues that fall under the rubric of "equity in education." Almost any policy question involving the distribution of resources (e.g., differential tax bases) or instructional practices (e.g., availability of computers or algebra courses) may raise equity concerns if the resources or practices are not available to all groups. In order to answer these types of questions, policy analysts must be able to examine the distribution of these resources and practices across the various subgroups of interests.

Key Principles and Assumptions

Before reviewing the status and adequacy of current national collections and the information available about student and community background, we will address some technical issues and concerns associated with these data. Issues of data validity/reliability, disaggregation, and timeliness will be discussed separately.

Validity/Reliability. Any demographic measure should be pretested and evaluated to ensure that it measures what it purports to measure. Inconsistency in how a measure is defined and interpreted by respondents will seriously compromise its usefulness. For example, the item from the National Center for Education Statistics (NCES) High School and Beyond survey, "Were you born in this country?," is not valid for Puerto Ricans because of

Puerto Rico's Commonwealth status.[1] Similarly, because different States use data for different purposes, their natural tendency is to tailor data definitions to their needs. Thus, States may define "at-risk," "poor," and even "enrolled" students differently, mitigating comparisons across these jurisdictions. The trick is to devise and implement standard definitions that provide the vast majority of States with the information they want while also allowing for reliable national reporting, fund-allocation decisions, and interstate comparisons.

In addition, it is important to eliminate any obvious threats to the validity/reliability of demographic data resulting from possible incentives for respondent dishonesty. For example, guarantees of respondent confidentiality should be made explicit in all collections, and the data collection agency should take all necessary steps to ensure that these commitments are maintained.

Disaggregation. It is appropriate to discuss two levels of detail in presenting the student and community background data: (1) simple descriptive aggregates at the State or national level and (2) variables related directly to school process, resource, and outcome measures at the student, school, and school district levels. Aggregate nationally collected, descriptive characteristics are useful in describing States and the Nation on broad characteristics of students and their home communities assumed to affect the conditions and outcomes of schooling. It is also particularly important to monitor trends in these characteristics over time, both to provide a context for other data reported on trends in schooling (e.g., changing resource levels or student outcomes) and for planning initiatives based on changing demographic conditions.

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[1] Fortunately, subsequent analyses and telephone followups reveal that Puerto Rican students overwhelmingly did not consider Puerto Rico to be part of the United States when answering this question (Fernandez, 1983).

Linkages between student and community background variables and school process, resource, and outcome measures at lower levels of aggregation (student, school, school district) are particularly useful for addressing questions of equity and equal education opportunity. Since any policy question (e.g., how well are students achieving academically?) has a corresponding equity version of the issue (e.g., how does academic achievement differ for students with different family income levels, and how is this pattern changing over time?), data collected to answer the former question can be used to address the latter question as well. In recognition of this fact, it is important to provide data on as many policy-relevant groups as possible in reporting on the conditions and outcomes of schooling.

Timeliness. For data to be most useful for policymakers, they must be up to date. Especially when dealing with rapidly growing or mobile groups, or dynamic economic circumstances, "old" data may yield flawed conclusions. Because of this, linking data on school resources, processes, and outcomes with dated Census data as well as using such data for fund allocation purposes may be problematic because Census information will be outdated for broad spans of time. While this does not mean we should ignore available Census data, it does imply that careful considerations should be given to the degree of reliance on decennial census counts. Other more frequent collections of demographic information on either a sample or universe basis appear to be in order.

Decennial census data can probably best be used when the objective is to analyze, in the aggregate, broad ***community*** demographic characteristics (such as wealth, income, density, and racial/ethnic composition) in relation to the aggregate education resource levels, school processes, and outcomes occurring in these communities. The fact that the reported community demographic characteristics may be out of date is not critical here because the focus is on the ***relationships*** between the demographic data and these other factors. As long as the background data are collected for a similar time period as that of the data to which they are being related (or the data can be reasonably assumed to represent the background conditions of that period), useful analyses can proceed. The NCES-sponsored Census Mapping Project, which relates decennial census data to school district boundaries, will permit such analyses using 1990 census data (NCES and U.S. Bureau of the Census, 1989).

When should decennial census collections be considered too infrequent for policy use? If the goal is to monitor the prevalence and distribution of critical student-population characteristics and how they are changing over time, decennial census data are usually inadequate. Given the shifts in population characteristics over a decade, data on student and family demographics should certainly be collected more than once every 10 years. However, except when used for allocating funds, such collections probably do not need to be carried out every year, either. Experience with the General Social Survey, an omnibus social-indicators survey conducted by the National Opinion Research Center (NORC), may be instructive. After initially conducting the survey on a yearly basis, the survey's sponsors (the National Science Foundation) concluded that fielding the survey every two years provided information that was both cost-effective and highly useful.

B. Current National Data Collections: Their Limitations and Potential Strategies for Improvement

The availability of data on student and community background characteristics varies greatly by data source. For example, sample surveys of individuals such as the National Educational Longitudinal Survey (NELS) (NCES 1990c-d), the National Assessment of Educational Progress (NAEP) (Educational Testing Service 1989), and the Current Population Survey (CPS) (Bureau of the Census 1989a-b, and 1990a-b) have collected significant amounts of data on background characteristics of individual students. On the other hand, the Common Core of Data (CCD) collects aggregate data from the public school universe on a more limited number of background variables (NCES 1988 and 1990b). It is appropriate that there are differences in the level of detail of the data that are collected. A sample survey imposes a greater burden on a much smaller number of respondents, who usually have immediate access to the information being requested. A data collection of the scope of the CCD must seek only the aggregate types of information that the respondents, who are using administrative data, can readily access.

The following two sections discuss in greater detail the types of student and community background data currently available as State/national-level aggregates (usually through school universe collections) and data that can be directly related to other measures of schooling at the student, school, and school district levels (usually through sample surveys). Areas where current collections must be improved to address policy questions discussed earlier are particularly noted.

1. National and State Aggregates

The main source of annual State and national aggregate data about student characteristics is NCES' CCD surveys (NCES 1988 and 1990b). These are annual universe collections from State administrative record systems that report descriptive information about the numbers and broad characteristics of all public school students and staff. Most reports are at the State-aggregate level, although public-use data tapes are available containing data on schools and school districts.

School enrollment counts have historically been available from the CCD in two ways: as Average Daily Attendance (ADA) and as fall membership counts. Aggregate State ADA reports generated from the fiscal survey component of the CCD collection are part of a legislated formula used to generate Federal allocations for Chapter 1 and other programs. However, the comparability of State ADA counts has recently been called into question by studies of the Council of Chief State School Officers (CCSSO) (Clements et al. 1988), the Inspector General of the U.S. Department of

Education (Office of Inspector General 1989), and NCES itself (NCES 1990a). The Inspector General and NCES have recommended changing the relevant Federal allocation formulas to use the NCES fall membership count--a more comparable statistic across States that is collected through the nonfiscal component of the CCD surveys--rather than ADA.

The CCD currently provides only limited information on student participation in prekindergarten programs, an increasingly important issue as evidenced by the national readiness goal recently endorsed by the Nation's Governors and the President.[2] Only participation in programs operated by public school systems are included in the prekindergarten count. Participants in privately funded programs and programs managed by other agencies (e.g., community service agencies that operate programs such as Head Start) are not included.

Another area of increasing attention among policymakers is the count of students with special educational needs. In recent years, the CCD surveys have been expanded to collect information on student race/ethnicity, free-lunch eligibility (a surrogate indicator of socioeconomic status), and special education status. However, the absence of free-lunch and racial/ethnic counts in many States, as well as the inability to break down the numbers of special education students by type of handicapping condition, have thus far limited the usefulness of these data. In addition, although the CCD collects overall enrollment levels for each grade, data on race/ethnicity (as well as sex) cannot be broken down by grade level.

Despite widespread interest in determining the number of pupils whose first language is other than English, the CCD does not collect any data on this condition. Nor does the CCD report on the number of students participating in bilingual or vocational education programs or who receive compensatory education services.

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[2] The goal states that by the year 2000, all children will start school "ready to learn." One of the jointly endorsed objectives listed under this goal is that "...disadvantaged and disabled children have access to high quality and developmentally appropriate preschool programs...."

Two other areas of aggregate student background data that education policymakers would find useful are statistics on health status (e.g., nutrition, health-related absenteeism, and drug and alcohol use) and mobility rates across different schools, school districts, and States. The CCD does not currently provide data in these areas.

In many instances, other Federal agencies may either collect or plan to collect data that would address some of the shortcomings that we have noted in the CCD. The Office of Civil Rights (OCR) collects national (but not State-level) data on racial/ethnic affiliation. The Office of Special Education and Rehabilitation Services (OSERS) collects data from each State on student handicapping conditions, although the data are not reported by race and specific handicapping condition, which would be particularly valuable. Counts of compensatory, bilingual, and vocational education students are collected by various program offices within the U.S. Department of Education. The Food and Nutrition Service (FNS) of the U.S. Department of Agriculture collects State-aggregate data on free-lunch participants. The Administration for Children, Youth, and Families (ACYF) within the Department of Health and Human Services collects data on Head Start participants, and the Centers for Disease Control (CDC) is launching a study to obtain national estimates of student participation in "at-risk" behaviors.

Finally, the Census Bureau's Current Population Survey (CPS), a traditional source of annually reported national and regional demographic data, may be expanded soon to provide State-representative data. Among other things, this data base could potentially provide annual estimates of within-State and interstate student mobility patterns. The U.S. Department of Education's annual collection on the number and location of migrant students can provide useful, though more limited, data on this general question.

Wherever data from other Federal sources could be used to buttress NCES aggregate student and community background data, it is important to ensure adequate coordination among the relevant agencies in the collection and reporting of these data. Improving coordination in data collection and reporting will result in a more comprehensive picture of aggregate student demographic conditions and trends. It can also provide data users with a more systematic identification of areas where information "gaps" remain and reduce the collection burden on data providers.

One should be aware, however, that improved Federal-level coordination of student and community background collections will sometimes be a difficult objective to achieve. Agencies collect and report data in certain ways to fulfill their own perceived statutory mandates and are often hesitant to alter their policies when they believe that their primary mission could, as a result, be compromised. The Food and Nutrition Service, for example, is currently opposed to releasing free-lunch information below the school district level because it feels that such releases could jeopardize its client's trust in the confidentiality of the information they provide. This policy effectively limits the broader use of this measure by education policymakers and researchers who consider it extremely valuable as the only readily available indicator of student socioeconomic status (SES).[3] Achieving better data coordination thus may often require extended negotiations and, ultimately, compromises among all affected parties so that divergent agency objectives can be accommodated. For this reason, and also because the validity and reliability of free-lunch data as an SES surrogate has sometimes been questioned, it is critical that the Federal government thoroughly investigate issues associated with the use of the free-lunch statistic by the education community as well as potential alternative measures of student socioeconomic status.

Another potential source of data on student and community background characteristics is the NCES Schools and Staffing Survey (SASS) (NCES 1989). First administered in 1988, SASS contains State-representative sample data on school enrollment (by grade), poverty levels (based on free-lunch counts), and racial/ethnic composition.[4] These can be used to give policymakers State-level estimates of broad demographic trends over time on these dimensions. (There are plans to administer this survey every two years after 1991.)

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[3] The policy should not, however, interfere with the regular collection and reporting of aggregate State-level free-lunch data.

Data from SASS could also be used to provide similar background information on students enrolled in private schools. Unfortunately, SASS private school data (unlike public school data) cannot provide representative State estimates, and the validity and reliability of private school estimates of student background characteristics may be problematic.[5] The NCES Private School Survey--conducted every two years--collects fall enrollment data by grade level from the known universe of private schools. No information is currently available from this survey on the background characteristics of private school students.

2. Variables for Direct Linkage to Education Characteristics

NCES' two premier student-level data collection efforts--NAEP and NELS:88--provide data on many student background variables including type of school attended (public/private), race/ethnicity, sex, age, language spoken, attitudes, and socioeconomic status (Johnson and Zwick 1990, NCES 1990c-d). The current NELS instrument provides more data of this type than does NAEP and is probably more reliable because it contains information from parents as well as students. NELS is certain to become a rich source of analytic information relating student instructional processes and outcomes to demographic characteristics, in cross section and over time. NAEP also reports at least some of its achievement data every two years and is planning to expand its assessment to include State-representative data (for those States choosing to participate) in the coming decade.

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[4] Race/ethnic estimates can also be made at the school district level from the SASS.

[5] Free-lunch counts, for example, are probably less valid indicators of school poverty in private schools since many private schools do not participate in the Federal school lunch program even though they serve students who meet the eligibility criteria for participation.

Also under discussion for the 1992 NAEP is some expansion in the number of student background questions to be included in the survey. For example, the inclusion of a variable on student mobility/school transfers is being discussed.

In addition to NELS:88 and NAEP, SASS data on student and community background characteristics can be particularly useful for school-level analyses. It is possible, with SASS, to relate the demographic composition of schools as reported by teachers and school administrators to important instructional features, particularly curriculum offerings and teacher competencies.

A new fiscal component of the CCD, to be collected in 1990 through a joint NCES/Census effort, will provide information about school district revenues and expenditures. Such data can be linked to decennial census information on the demographic characteristics of communities to investigate questions of resource adequacy and equity.

C. Summary of Recommendations for Improving the Collection and Reporting of Student and Community Background Statistics

The policy questions that can be informed by demographic data have a number of important implications for data collection and reporting. Most fundamentally, policymakers need the ability to ascertain broad trends and patterns over time on key demographic characteristics of students, families, and school communities. Given the mobility of student populations and the frequent changes in their circumstances, data on such characteristics need to be collected often and reported with regularity.

In addition, there is the issue of allocating resources "fairly" based on the relevant input characteristics of students. When jurisdictions employ idiosyncratic definitions of student characteristics (e.g., race, income, attendance) that are used to allocate education program funds, the integrity and fairness of the programs and their funding systems are compromised. Thus, whenever demographic data are used to allocate program funds, definitions should be consistent and uniformly applied.

Finally, since demographic data are likely to be related to other information in performing many analyses, policymakers need to be able to look at variables of interest by demographic subgroup. Whether a policy question is put in terms of individuals (e.g., are students receiving instruction from "qualified" teachers?) or aggregates (e.g., are schools and districts employing appropriately "qualified" instructors?), the equity question of whether the findings are consistent for all racial/ethnic groups and social classes is relevant. Thus, regardless of the manner in which a question is posed, student and community background data are critical for addressing questions of equity.

The following recommendations in the domain of student and community background statistics represent broad directions for statistical improvements that are designed to better meet the data needs of the education policy community. It is assumed that any statistical products ultimately created in response to these recommendations would have to pass the tests of data validity, reliability, level of aggregation, and timeliness discussed in Chapter 1 if they are to be truly useful to policymakers. To achieve these objectives, continued cooperation among data providers and users will be necessary in the developmental work that lies ahead.

The National Forum makes the following seven recommendations for improving data collection and reporting in the domain of ***student and community background statistics***:

1. Using data extracted from State administrative record systems on the universe of public school students, the National Center for Education Statistics (NCES) should annually collect and report State- and national-level aggregates on the following student background characteristics:
   - Fall membership counts by race/ethnicity by grade; and
   - Fall membership counts by sex by grade.

2. NCES should annually report State- and national-aggregate statistics collected by other agencies on the following student subgroups:

   - Handicapped students served, by type of handicap;
   - Free-lunch participants; and
   - Participants in compensatory, bilingual, and vocational education programs.

3. NCES, in cooperation with other Federal and State agencies, should work toward the regular collection and reporting of the following State and national student background statistics:

   - Limited-English-proficiency status;
   - Student handicapping conditions by race;
   - Participation in prekindergarten education programs;
   - Student health status (e.g., nutrition, health-related absenteeism, and drug and alcohol use); and
   - Student mobility and migrant status.

4. The Office of Educational Research and Improvement (OERI) should fund special studies investigating the efficacy of using free-lunch data as proxies for student socioeconomic status (SES), and the costs, benefits, and burdens associated with regularly collecting and reporting alternative SES measures. These studies should specifically examine issues of validity, reliability, and usefulness of free-lunch and alternative measures for different types of reporting and analysis as well as administrative issues related to the collection and reporting of such measures.

5. NCES should develop the capacity to collect and report data on private school student background characteristics that are parallel to those being developed for the universe of

public school students. Data might come from the NCES Private School Survey and the Schools and Staffing Survey, and they should be reported as national aggregates and, to the extent feasible, State aggregates.

6. In reporting measures of education resources, school processes, and student outcomes from its sample and universe surveys, NCES should attempt, to the extent feasible and appropriate, to provide disaggregated data using the following student and community background characteristics:

   - Sex;
   - Racial/ethnic-group affiliation;
   - Limited-English-proficiency status;
   - Community wealth; and
   - Family income.

7. NCES should consider reporting distributional patterns for the following student and community background variables in conjunction with particular resource, process, and outcome measures:

   - Public/private school enrollment;
   - Student employment status;
   - Measures of family background (e.g., parents' education, language spoken in the home);
   - Student mobility; and
   - Student handicapping condition.

Chapter 3

Education Resource Statistics

A. Rationale and policy questions - p. 41

B. Current data collections and their limitations - p. 43

C. Recommendations for improving collection and reporting - p. 55

This chapter is based on an "idea paper" prepared for the National Forum by Dr. Margaret Goertz of the Educational Testing Service (ETS), Princeton, New Jersey. Dr. Goertz, assisted by Dr. Martin Orland of the National Center for Education Statistics, also prepared the draft manuscript for the chapter in cooperation with the Forum subcommittee on education resource statistics chaired by Dr. James Phelps of the Michigan Department of Education.

Education Resource Statistics

Education resources include both money, ***fiscal resources***, and those resources that money buys, ***human and nonhuman resources***. States--and school districts within States--have varying ***amounts*** of money or revenues available to them, ***governmental levels*** providing funds (e.g., Federal, State, intermediate, and local), and funding ***sources*** (e.g., taxation, aid, nontax revenues). For example, average State per-pupil expenditures ranged from a high of $8,253 to a low of $2,362 in 1985-86 (NCES 1988, Table 115). Sources of funding vary as well. The State of Hawaii provides nearly all elementary and secondary education resources, while New Hampshire provides less than 10 percent (NCES 1988, Table 108).

States, local education agencies (LEAs), and schools use fiscal resources to obtain the human and nonhuman resources required to provide education services. Human resources include instructional and noninstructional staff; nonhuman resources include facilities, textbooks, computers, and computer software. The amount, type, and mix of human and nonhuman resources that a district purchases is influenced by district objectives, State mandates, and cost differentials.

A. Rationale and Important Policy Questions

Education policymakers and the public have become increasingly interested in recent years in how education dollars are spent and in the relationships between education revenues, expenditures, and outcomes. They seek information that will address the following questions:

1. **What is the total amount spent on elementary and secondary education at the national, State, and local levels?**
    - How has this level of support changed over time?

2. **What percentage of that amount comes from each source of revenue (i.e., Federal, State, intermediate, local, private)?**

    - How has the level of education revenues changed in relationship to the national economy (as measured by personal income, GNP/Gross State Product [GSP])?
    - How has the relative contribution of each source changed over time?
    - How have the sources of local revenue changed over time (e.g., changing reliance on the local property tax to support education)?

3. **What do education dollars buy at the national, State, and local levels?**

    - How much is spent on instructional services? Noninstructional services?
    - How much is spent on human resources? Nonhuman resources?
    - To what extent have new dollars purchased additional services? Supported existing services (e.g., increased teacher salaries)?
    - How have these patterns changed over time?

4. **How are education resources distributed among the States and school districts?**

    - To what extent does the level of education resources vary among States? LEAs? How have these differences changed over time?
    - How does the mix of education revenues vary across States and LEAs?
    - How does the mix of expenditures by function differ among States? LEAs?

5. **How do States allocate education resources given differences in levels of student need, fiscal capacity, and costs? In particular:**

    - How much are States spending for teachers and other education staff, taking into account these differences?
    - How much revenue is raised from Federal, State, and local sources, taking into account these differences?

B. Current National Data Collections: Their Limitations and Potential Strategies for Improvement

The Federal Government collects and reports some national- and State-level education resource data on an annual basis. The National Center for Education Statistics' (NCES) Common Core of Data (CCD) surveys and the Census Bureau's Survey of Local Government Finances are the primary Federal sources of information on fiscal and nonfiscal education resources. Because the CCD data are used more extensively by education policymakers, this section will focus on the CCD education resource collections.

CCD Surveys and Publications

Fiscal Survey. The CCD fiscal survey, completed every year by State CCD coordinators, collects information on education revenues and expenditures, aggregated across all public elementary and secondary school districts in each State. Data from this survey are published in Federal reports and used in calculations to determine the funding allocations for a number of Federal education programs.

In recent years, the CCD fiscal survey requested revenue data aggregated into only four categories (Federal, State, intermediate, and local) and expenditure data aggregated into only three functions (instruction, support services, and noninstructional services). However, with the implementation of the new "National Public Education Financial Survey" in FY 1989, the CCD fiscal survey, for the first time in almost a decade, requested detailed fiscal information on revenues and expenditures.

For example, States were asked to report on 13 different sources of local revenues and to report on instructional and support service expenditures by 6 object categories. The number of functional areas has been expanded as well. In addition, the new CCD fiscal survey uses the same classifications that appear in the NCES 1980 *Financial Accounting for Local and State School Systems* (Handbook 2R2).

Although NCES has collected aggregated education fiscal data from States for many years, the data in each of the major reporting categories have not necessarily been comparable across States. The degree of comparability is determined by the similarity of fiscal definitions and/or procedures States use when reporting data. A survey conducted by the Council of Chief State School Officers' Education Data Improvement Project (EDIP) revealed that only 23 States use accounting systems that conform closely to Handbook 2R2.[6] Twenty-five States use earlier versions of the handbook (17 use a handbook similar to Handbook 2R [1973], and eight use a handbook similar to Handbook 2 [1957]). The remaining three use their own systems (Education Data Improvement Project 1988).

One of the primary objectives of the Education Data Improvement Project was to compare the definitions and classifications used by each State with those contained in Handbook 2R2. The project staff found that States appear to collect data on State and Federal revenues that conform closely to Handbook 2R2 definitions and at approximately the same level of detail. However, States are less consistent in collecting local revenue data. In particular, many States do not break out information about local tax, tuition, and transportation sources by subcategories or do not collect data from LEAs using these subcategories.

With regard to education expenditures, most States can provide comparable data for the functions under instruction, support services, noninstructional services, and debt service. However, State data on capital outlays by object categories and on expenditures made by States on behalf of LEAs (e.g., textbooks, transportation, pensions) are more problematic. Fewer than half of the States collect expenditure information about functions under capital outlays, and many States do not distinguish between instructional and noninstructional staff categories when reporting salary and/or employee benefit data. There is some evidence, however, that more detailed expenditure information is often available at the object level from LEAs (Education Data Improvement Project 1988).

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[6] The project assigned States to a particular handbook if at least 80 percent of the definitions in the State accounting handbook agreed with the definitions in the Federal handbook.

NCES has initiated efforts to help States address the comparability problem. The Center provides training to SEA personnel who complete the CCD fiscal survey during its annual Elementary and Secondary Education Data Conference each summer. In addition, the NCES "Crosswalk Project" has made it possible to "crosswalk," or recombine, noncomparable fiscal items into the correct reporting categories as specified in the new fiscal survey. The project identified areas where State definitions and/or procedures differed from those specified for the new fiscal survey, enabling NCES to tailor training for State data coordinators and also to develop crosswalk protocols for State respondents to use when completing the CCD survey (NCES 1989).

The expanded CCD fiscal survey (with support from the "Crosswalk Project" and data from the CCD nonfiscal surveys) will enable NCES to provide most of the data needed to answer the education resource questions posed above at the National and State levels--but not at the local level. For example, to address the question of how education resources are distributed in the different States, the revised survey will permit the reporting of State expenditure patterns by "function" (e.g., amounts spent on instruction, general administration, school administration, etc.) by "object" (e.g., amounts spent on salaries and employee benefits). The survey will also make it possible to report objects within a function or functions within an object (e.g., percentage of salary costs going to instruction or, conversely, the percentage of instructional costs spent on salaries). A more complete listing of the data elements in the revised CCD fiscal survey is provided in an appendix to this chapter.

Nonfiscal Survey. As noted in Chapter 2, the CCD nonfiscal surveys collect data at the school, district, and State levels on the number of students and staff in the public elementary and secondary school system. Student data collected at the school level include membership counts by grade, racial/ethnic grouping, and free-lunch eligibility status.[7] The membership definition used in the 1988-89 survey is the count of students made on the school day closest to October 1. Counts of students with special education individual education plans (IEP) are currently available at the school district but not school level. However, the number of students receiving special compensatory or bilingual education services are currently unavailable on any level from these surveys.

Staff data collected in the nonfiscal survey include numbers of teachers (prekindergarten, kindergarten, elementary, secondary, and ungraded), instructional aides, counselors, librarians, school and district administrators, and support staff. Counts of these are available at the State-aggregate level only, except for the number of classroom teachers, for which school-level data are collected.

Education Resource Publications. The U.S. Department of Education has reported trends in the level and types of education revenues and expenditures for many years. For example, the *Digest of Education Statistics* (NCES 1988) reports the following information for the current year and for selected prior years:

- Revenues for public elementary and secondary schools by source of funds for the Nation and by State;
- Current expenditures for education by purpose for the Nation;
- Current expenditures for education by State;
- Current expenditure per student for the Nation and by State;
- Average teacher salary for the Nation and by State;
- Index of public school revenues in relation to personal income; and
- Number of staff and pupil-teacher ratios.

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[7] As discussed in Chapter 2, data are currently not available from some States on racial/ethnic counts and free-lunch eligibility by school.

In addition, resource data collected by NCES are reported in E.D. TABS, topical bulletins and analysis reports, and the Education Department's *State Education Performance Chart* (the "Wall Chart"). These reports enable State and Federal policy analysts and school finance researchers to track changes in the financing of public elementary and secondary education and to understand how different States finance education.

As data from the expanded CCD collection are received, NCES will report more detailed information on the components of education revenues and expenditures at the national and State levels. These new data will permit NCES to report alternative measures of elementary and secondary education expenditures such as "core" education expenditures; data on selected expenditure functions such as instruction, administration, operations and maintenance, and transportation; and the relationships among State contextual factors and fiscal measures (e.g., the relationship between per-capita income, gross State product, and percentage of poor students and/or core expenditures per pupil) (Moore, Myers, and Gutmann 1989).

Limitations

We have identified 10 specific limitations in the current NCES collection and reporting of education resource data.

1. Cost Adjustments. We believe that it is critical to include some type of cost adjustment factor when comparing fiscal resources across communities and States. Similar expenditures will purchase different units of the same resource in different communities and/or in different States. For example, the average teacher salary in Alaska is $44,000 compared with $19,500 in Mississippi (NCES 1988, Table 58). Thus, the same number of dollars can support twice as many staff members in Mississippi as they can in Alaska.

It is necessary to account for differences among States in the cost of providing similar education services in order to avoid potentially misleading impressions created by national resource statistics. For example, the expenditure and salary statistics presented in the Education Department's "Wall Chart," while appropriate for inclusion as resource measures because of their perceived value and importance, are not truly comparable across States because no cost adjustments are made. Nor can trends over time in education resource commitments be determined (either for individual States or nationally) as long as the measures used are not converted from current to constant dollars. The need for State specific education resource cost adjustments should become even more critical in the future with the release of State-by-State NAEP results because the press, public, and policy analysts may relate State expenditure figures to tested achievement results.

If cost adjustment techniques were developed, national statistical publications such as the Wall Chart could use them to enhance the comparability of the following currently reported measures: (1) average teacher salary; (2) current expenditures per pupil; and (3) expenditures for classroom teachers as a percentage of total current expenditures. Cost-adjusted expenditure and salary data could also be incorporated into regular NCES publications when appropriate.[8]

2. International Cost Comparisons. The recent publicity associated with the publication of a report comparing education expenditures levels in the United States with those of other industrialized nations (Rusell and Mishel 1990) and the reaction to that report by the U.S. Department of Education exemplify the growing interest in international education resource comparisons. Many of the difficulties associated with developing a truly comparable international resource measure are similar conceptually to those that arise in making valid interstate resource comparisons (such as controlling for differences in the unit costs of "equivalent" teachers or other resource inputs). Others are more unique to the international arena (e.g., taking into account the vastly different roles of private-sector education service providers and distinctions between elementary-secondary and postsecondary education). Clearly, the problems of both conceptualization and implementation are substantial. However, given the level of interest in such a statistic (one, we suspect, that is likely to continue as international comparisons in other education domains become more commonplace), there is a need to begin the necessary research and development work to determine whether a comparable, regularly reported international statistic on education resource levels can be developed.

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[8] We would recommend that these newly "adjusted" measures be reported as additions to, not replacements for, the current unadjusted statistics in these areas.

3. Student Counts. Because pupil counts are essential for presenting education resource levels on a "per-unit" basis (the unit being the pupil), counts of students are critical elements of education resource data. As noted in Chapter 2, NCES collects two types of student counts: fall membership (Nonfiscal Surveys) and Average Daily Attendance (ADA) (Fiscal Survey). Federal law requires that ADA be used to calculate the State-per-pupil expenditure (SPPE) for certain Federal program allocations.[9] States may use one of two methods in reporting ADA: (1) ADA as defined by State law or (2) only in the absence of a State definition, ADA as defined by NCES.

The use of ADA as a way to measure student counts can create several comparability problems. First, the denominator in the per-pupil expenditure figure reported for each State is not comparable because the definition of ADA varies among States. Second, the use of ADA in reporting expenditure and revenue data limits comparability with other education resource data such as teacher-student ratios, where membership is the denominator.

Another data limitation concerns counts of special-needs students. As reported in Chapter 2, NCES does not collect or regularly report data on students who participate in special-needs programs such as ECIA Chapter 1 and other compensatory education programs, special education, bilingual education, and vocational education. Yet these data will be needed to address policy questions relating resource allocation levels to differential levels of student need (See policy question No. 5 in this chapter).[10]

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[9] These programs include Chapter 1, Impact Aid, Indian Education, Part B of Education of the Handicapped, Title VII of the McKinney Homeless Assistance Act, and other programs whose allocations are based, in whole or in part, on the State per-pupil expenditure data derived from the information reported by SEAs (NCES 1989 p. 27).

4. Program Expenditures. Current national resource data collections provide no information on relative financial commitments for particular program purposes, or for different curriculum content areas and grade spans. It would be valuable to know how much States and the Nation spend for such purposes as compensatory education, special education, and vocational education, as well as how these expenditures are changing over time. It is also important to learn about and monitor resource commitments in such areas as science, math, and foreign-language education, particularly at the secondary level.

We recognize that developing a complete capacity to collect and report data of this type is a long-term proposition, requiring the creation of program-based accounting systems and comparable definitions of relevant program categories in different locales. Nonetheless, it might be possible to estimate major costs for particular programs without a full-scale transition to program accounting. For example, secondary school teacher salary expenditures by subject area might already be available in many States or require only relatively modest refinements in existing State recordkeeping systems.

5. Teacher Salaries. Until quite recently, no information on elementary/secondary teacher salary levels in different States has been available from government sources. Since teachers constitute the primary resource input in education, it is important for policymakers, analysts, and researchers to know how the costs of this input vary among States, how the costs may be changing over time, and how the costs relate to other features of schooling within the broad education context. An average teacher salary measure would reveal the general level of resources committed to teaching personnel, and a measure of teacher salaries with specified degree and experience credentials would reveal the level of resources committed for comparably classified personnel. Over the long term, measures indicating the total dollar investment in education personnel--broken down by type of staff and expenditure (e.g., salaries, fringe benefits)--would serve a wide range of purposes.

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[10] Recommendations 2 and 3 in Chapter 2 of the *Guide* attempt to address this current data limitation.

The Schools and Staffing Survey (SASS) provides representative State-level estimates of average teacher salary levels as well as of major salary components (base pay, summer pay, extracurricular pay, etc.). Such data, while vital as an analytic variable in the SASS data set, are more problematic as regularly reported "stand alone" indicators of teacher salary levels in a State. Because of widespread interest in this statistic, it has typically been reported annually by the National Education Association and the American Federation of Teachers (the only current sources of State-level data on teacher salaries). SASS data, however, are reported only every other year (after 1991). Further, because they are from a representative sample of teachers, the SASS data contain sampling errors that might make it difficult to monitor and compare State-level trends over short periods or to relate SASS findings directly to other reported items on the CCD surveys (such as overall State per-pupil expenditure levels). Given these concerns, expanding the CCD surveys to incorporate teacher salary data would seem to be a preferable strategy.

6. Data on State Revenues. The expanded CCD finance survey does not collect detailed information on State aid allocated to local school districts such as general aid, categorical aid, and building aid. Yet this type of information would provide policymakers and analysts with a better understanding of the ways that States finance education in general and education reform efforts in particular. These data could be obtained by including the following categories of State aid in the NCES annual fiscal survey:

- General aid;
- Categorical aid (e.g., compensatory, special, bilingual, vocational education);
- Pupil support services (e.g., transportation, textbooks);
- Building aid; and
- Direct program support on behalf of LEAs (e.g., textbooks, transportation, employee benefits).

7. Private School Expenditures. Financial data on private school expenditures is currently absent from regular national resource collections and reports. NCES periodically surveys private schools to collect data on the number of schools, students, and staff. The primary source of expenditure data is the National Catholic Educational Association, which regularly publishes reports on Catholic schools and their finances (National Catholic Educational Association 1988a-b). These data are important for understanding the total financial commitment to elementary/secondary education in the Nation and individual States. In addition, data on private school expenditures by broad categories that are consistent with those collected and reported for public schools would help policymakers and analysts understand relative resource commitments in the public and private education sectors, how they might change over time, and how the types of expenditures may differ between the sectors.

8. LEA Data Collection and Reporting. As noted earlier, NCES currently collects and reports fiscal data at the State level only. However, most of the fiscal data reported by the States has been aggregated from reports submitted by LEAs to their respective State departments of education. Some States report LEA-level data to the public in district-by-district reports, but others report only data aggregated across their LEAs.

The U.S. Bureau of the Census collects LEA-level fiscal information annually from State education agencies (SEAs) through the Survey of Government Finances (1987). In an effort to reduce respondent burden, the Census Bureau uses a variety of data collection procedures including reformatting of SEA computer tapes by Census staff, reformatting of computer tapes or computer printouts by SEA staff, and compilation from SEA source documents by either Census Bureau or SEA staff.

Every five years (for years ending in two and seven), the Census Bureau report, *Finances of Public School Systems*, provides data on school systems' revenues, expenditures, debt, and financial assets for the Nation, for States, and for individual school systems having 5,000 or more enrollment.[11] However, the report provides limited detail on revenue sources and expenditure functions,[12] and data comparability problems have been identified (Bureau of the Census 1987, p.ix and appendix B).

Collecting and reporting more detailed and comparable resource data at the LEA level would enable education policymakers and analysts to compare expenditures and revenues among school districts within States and/or among groups of districts with different characteristics (e.g., size, urbanicity, characteristics of student populations). The Census Bureau and NCES are about to undertake a joint local finance collection encompassing all local school districts. It is anticipated that the fiscal data obtained from this school district universe collection can eventually be linked to 1990 decennial census information on district demographic characteristics. This effort is intended to serve as a prologue to future joint local collections that, at least periodically, would include more detailed reporting categories than are currently being requested.

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[11] Data tapes containing financial data for all school systems processed in this survey (i.e., the school district universe) are also available from the Census Bureau. In addition, the Census Bureau can supply data tapes from its less comprehensive annual local finance collection (containing a mixture of sample and school universe data, depending on the State).

[12] The major categories for which data are regularly collected and reported by the Census Bureau are intergovernmental revenue, general revenues from own sources (taxes, contribution from parent government, current charges, interest earning, and miscellaneous), intergovernmental expenditures, current operation expenditures (instructional services, support services, school lunch, and other), capital outlay expenditures, interest on debt, salaries and wages, and debt outstanding.

9. Human Resource Descriptors. The nonfiscal CCD collection provides information on the numbers of school staff in several human resource categories (including teachers, instructional aides, counselors, librarians, and administrators). However, the absence of additional breakdowns limits the potential usefulness of the collection. For example, because the "officials and administrators" category does not distinguish between personnel providing instructional support services directly to students and those whose responsibilities are purely administrative, it is difficult to determine the actual distribution of human resource commitments (instructional v. administrative) in the schools and how they change over time.

In addition, the current CCD collection does not contain important descriptive data about school staff such as their race/ethnicity, sex, and age. Data of this type are especially important for addressing human resource equity issues (e.g., minority representation in various staffing categories). Subject to the limitations cited earlier in the discussion of teacher salaries, SASS can be used to provide extensive (State representative) information on the descriptive characteristics of teachers and school principals.

10. School Facility Data. The age and condition of the Nation's school buildings is a growing concern among policymakers. Recent national reports have warned that an infrastructure crisis may be looming (National Governors' Association 1989). Yet the State data relied upon in making these assessments are incomplete, and their reliability and comparability across locales is problematic. Planning at the Federal and State levels would benefit greatly from standardized, periodic inventories of the age, condition, and facility needs of school buildings for each State and the Nation.

C. Summary of Recommendations for Improving the Collection and Reporting of Education Resource Statistics

As discussed above, the Federal Government already collects most of the data needed to address the major education resource policy questions. Activities related to the redesign of the Common Core of Data already include the development of an expanded data collection instrument that provides more detailed revenue and expenditure data and a process of "crosswalking" State accounting categories into those used in Handbook 2R2. Thus, some of the recommendations concern logical improvements or enhancements to current data collection activities. This is not to say that the recommendations to further improve the usefulness of the Common Core of Data's fiscal survey will be easily or quickly implemented. However, at least in this area, work has begun, and the basic direction appears sound.

In other areas, much developmental work and assessment of alternative strategies will be necessary before implementation can proceed. A variety of techniques to adjust resource costs, for example, have been developed by economists. Each has strengths and weaknesses, each is appropriate for some purposes more than others, and each carries with it different cost and burden implications. We should emphasize again that our endorsement of a particular data improvement recommendation represents a statement about the potential policy ***value*** of a particular kind of statistic that is not currently collected or reported. It means that we, as members of the Forum, want to jointly investigate this potential data improvement more fully because we believe it could fulfill an important, and currently unmet, data need. It is ***not***, however, a commitment to support any particular plan or strategy for meeting the objectives embodied in the recommendation.

The National Forum makes the following 12 recommendations for improving data collection and reporting in the domain of national ***education resource statistics***:

1. The National Center for Education Statistics (NCES) should collect and report a set of national- and State-level education revenue, expenditure, and human resource measures on an annual basis, using data items from the "National Public Education Financial Survey" and the Common Core of Data (CCD) Nonfiscal Surveys.

2. NCES should continue to provide training and technical support to States to "crosswalk" data elements specified by the current CCD Financial Survey as well as other assistance necessary for meeting the Handbook 2R2 classifications.

3. NCES and other Federal agencies should investigate the feasibility of developing a State-by-State statistical measure to adjust education resource data for differences among States and to report education resource trends over time in constant dollars.

4. NCES and other Federal agencies should investigate the feasibility of developing a State-by-State statistical measure to adjust salary data for differences among States and to report education salary trends over time in constant dollars.

5. NCES and other Federal agencies should engage in research and development efforts that will enable them to make accurate, comparable, and informative international comparisons of U.S. national education resource commitments with those of other industrialized nations.

6. NCES should continue to collect and report data from the CCD aggregated to the State level on an annual basis. However, the Center should, over time, develop policies and procedures for the regular collection and reporting of district-level resource data. In moving toward district-level resource collections, NCES should be particularly cognizant of (1) identifying potential reports such data could generate and (2) the capacity of States to provide district-level data.

7. NCES should expand the annual CCD "State Administrative Records Survey" to include: (1) an average teacher salary measure that takes into account contract, career ladder, and other special incentive pay and (2) a teacher salary measure that takes into account degree status and experience.

8. NCES should make a long-term commitment to establishing a program- and functionally-based accounting system. This will provide NCES, policy analysts, and other education researchers with better information about how education funds are spent and make it possible to relate program resources to the specific education needs of students. The particular program levels to be collected should be determined ***after additional study***, taking into account the costs and burdens associated with the development of comparable definitions of relevant program categories across different locales.

9. NCES should expand the Federal Government's survey of ***private*** schools to include resource information. Wherever feasible, the Center should report private-school resource data from its surveys on a State-by-State basis.

10. NCES should establish, as a long-term objective, the collection of data regarding the status of ***buildings***, including the number, age, condition, and facility needs of the Nation's schools.

11. NCES should regularly report data on the number and descriptive characteristics (i.e., age, sex, race) of instructional, instructional support, and noninstructional staff in the Nation's schools. Such data should be reported at the State level to the extent feasible.

12. NCES should establish, as a long-term objective, measures that indicate total dollar investments in education personnel. These measures should be specific to different types of staff (e.g., teachers, administrators, instructional aides) and include both direct compensation expenditures (salaries) and indirect compensation (fringe benefits).

Chapter 3 - Appendix

Current Data Elements Provided by the Redesigned Common Core of Data Financial Survey

Except where indicated, the data elements listed below will come from the expanded Common Core of Data (CCD) fiscal survey. They are grouped according to the policy questions noted at the beginning of this chapter.

1. **What is the total amount spent on elementary and secondary education at the [national and State] levels?**

2. **What do education dollars buy at the [national and State] levels?**

3. **How are education resources distributed among the [States]?**

- Education expenditures

  - Total
  - By object
    - Salaries
    - Employee benefits
    - Purchased services
    - Property and supplies
    - Other

- Expenditures on instruction

  - Total
  - By object
    - Salaries
    - Employee benefits[13]
    - All Other[14]

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[13] Includes direct State funding of employee benefits for public school employees.

[14] Includes direct State funding of textbooks for public school children.

- Expenditures on support services

  - Total
  - By function

    - Students
    - Instructional staff
    - General administration
    - School administration
    - Operations and maintenance
    - Student transportation[15]
    - Other

- Noninstructional expenditures

  - Total
  - By function
    - Food services
    - Enterprise operations
    - Student body activities
    - Community services

- Capital outlay and debt service

  - Total
  - By function
    - Facilities acquisition and construction
    - Equipment
    - Debt service: principal and interest

- Direct-cost programs (expenditures for other than public pre-K-12 programs)

  - Total
  - By function
    - Nonpublic school programs
    - Adult education programs
    - Community college programs
    - Other

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[15] Includes direct State support of transportation for public school students.

- Number and types of staff providing education services
  - Teachers
  - By Level
    - Prekindergarten
    - Kindergarten
    - Elementary
    - Secondary
    - Ungraded
  - Other Staff
    - Instructional aides
    - Counselors
    - Librarians
    - School administrators
    - District administrators

4. **What percentage of [the amount spent on elementary and secondary education] comes from each source of revenue (e.g., Federal, State, intermediate, local, private)?**

- Total education revenues
- Total Federal education revenues
- Total State education revenues
- Total intermediate education revenues
- Local education revenues
  - Total
  - By category of revenue
    - Local property taxes
    - Nonproperty taxes
    - Revenues from other local governmental units
    - Tuition and transportation from individuals and other LEAs
    - Food service
    - Student activities
    - Other local revenues

5. **How do States allocate resources given differences in levels of student need, fiscal capacity, and costs?**

- Fiscal capacity
    - Personal income[16]
    - Gross state product per school-aged child[17]
    - Relative tax capacity[18]
- Student counts
    - District enrollment (nonfiscal surveys)
    - Average daily attendance (fiscal survey)

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[16] From the U.S. Census Bureau's annual Current Population Survey.

[17] From the U.S. Bureau of Economic Analysis. Used by the Council of Chief State School Officers in its "State Indicators" reports.

[18] Developed by the Advisory Commission on Intergovernmental Relations and reported in its annual *Significant Features of Fiscal Federalism* series. Used by the Council of Chief State School Officers in its "State Indicators" reports.

Chapter 4

School Process Statistics

A. Rationale and policy questions - p. 66

B. Current data collections and their limitations - p. 71

C. Recommendations for improving collection and reporting - p. 79

This chapter is based on an "idea paper" prepared for the National Forum by Dr. Andrew Porter of the University of Wisconsin at Madison. The draft manuscript for the chapter was written under the supervision of Dr. Martin Orland of the National Center for Education Statistics with contributions by Dr. Rolf Blank of the Council of Chief State School Officers, Dr. Anne Hafner of the National Center for Education Statistics, Dr. Joan Shoemaker of the Connecticut Department of Education, and Dr. David Stevenson of the U.S. Department of Education, Office of Research. It was prepared in cooperation with the Forum subcommittee on school process statistics chaired by Dr. Robert Burns of the Oregon Department of Education.

School Process Statistics

Of the four data domains that constitute this national statistical agenda, recommending improvements in the school process area has proven to be the most challenging. The difficulty stems from two major sources. First, there is almost universal agreement that information about what and how much students are learning is essential for monitoring the quality of the Nation's schools. There is also general agreement that it is essential to monitor the Nation's resource inputs to education and the demographic characteristics of students. However, there is less-than-full agreement about the need for--and even the validity of--measures that address the nature of the schooling experience. These types of measures include school-process indicators such as who provides classroom instruction; what is being taught, and how well; and what are the characteristics of the teaching and learning environment.

Second, there is less precedent for national data collections in the area of school processes than in the three other domains. For example, there are no regularly collected national measures of instructional quality, chiefly because there is neither a consensus on what constitutes valid "indicators" of such quality nor agreement on how such indicators should be measured. Even efforts to collect seemingly straightforward measures such as teacher qualifications have been hampered by similar conceptual and technical concerns (e.g., how do you define a qualified teacher?).

It is the view of the National Forum that despite these obstacles, ***school process measures constitute a necessary and important component for monitoring the condition of education;*** informing national, State, and local policy decisions; and providing better accountability mechanisms.

For the policymaker, there are three rationales for regular collection and reporting of school process measures. First, process measures can ***describe instructional practice*** and, with this, the degree to which quality educational opportunities are available to all students in all schools. Do children from poor families have the same opportunity in school to learn higher-order thinking and problem solving as do children from more affluent families? To what degree are students taking courses in high school that satisfy college entrance requirements? To what extent do teachers accept responsibility for student success or failure in learning?

Second, process measures can ***monitor reform***--the degree to which recommended changes in education practice are actually being implemented. Education in the United States is periodically subject to reform efforts that often call for substantial changes in current practice: changes in curriculum emphasis, changes in organizational structure, and changes in teaching techniques. While the motivation for reform is generally a concern for student outcomes, the focus for reform is typically on education practice. Monitoring these reforms requires a regular system of indicators on curriculum, on school environment, and on teaching.

Finally, process measures can ***help to explain discrepancies in education performance*** or the possible reasons why student achievement may vary across locales and over time. For example, if student outcomes are improving more in one State than another, then knowledge of differences in curricula, instruction, and school organization can provide policymakers with ***clues*** to explain these differences and point them toward promising future policy directions. While recognizing that relationships between schooling processes and outcomes are inherently complex, we believe that tentative and judicious explorations of such relationships by policymakers can lead to improved education policy and practice.

A. Rationale and Important Policy Questions

Key Principles and Assumptions

The National Forum recommends that consideration be given to developing improved measures of school-process indicators in three sub-domains: the implemented curriculum, teaching quality in a subject area, and school environment. Within each sub-domain, our discussion and recommendations for statistical improvements are guided by the following five general principles:

1. To measure curriculum and teaching quality, the focus should be subject specific (e.g., math, science, reading);
2. To develop process indicators, consideration should be given to their utility, feasibility, and burden;
3. To address policy questions of interest with respectable validity and reliability, sample and universe surveys may be used even though other methods such as structured observations and interviews may provide richer detail;
4. To monitor the relationship between process, outcomes, and equity, results should be analyzed separately by race/ethnicity, socioeconomic status, and sex wherever feasible; and
5. To advance the art of measurement, special studies should be funded to pilot new techniques for measuring school processes.

The following sections provide specific rationales and associated policy questions for the three process sub-domains, along with discussions of current data collections and reports. Then, we provide a series of recommendations for data improvement in these sub-domains of school processes.

1. The Implemented Curriculum

Rationale. The "implemented" curriculum refers to what is actually taught in classrooms: content and topic coverage, time and emphasis devoted to subject areas, course taking, and the context in which instruction occurs. It includes both broad subjects (e.g., mathematics, history) and specific topic areas within these subjects (e.g., probability, American foreign policy) and is often measured by a time metric (e.g., the number of minutes or class periods devoted to the subject or topic area).

The implemented curriculum is a key indicator because we cannot expect students to learn what they have not been taught, and we cannot take for granted that schools are organized in ways that guarantee that all students are exposed to important content. Fortunately, research and common sense appear to be in agreement on this matter. Researchers are finding teacher and classroom explanations for differential student achievement increasingly salient. While individual factors such as socioeconomic status and ability are still believed to account for a large proportion of variation in achievement, curriculum variables are often considered as important, if not more important, than home background and other student variables.

A recent meta-analysis on variables related to learning, for example, found that quality and quantity of instruction were roughly equal in importance to student characteristics and out-of-school contextual variables (Wang, Haertel, and Walberg, 1988). In particular, time on task (sometimes referred to as "opportunity to learn") was found to be the most frequently cited variable in the instructional area.

Similarly, Cooney and Dossey (1983) and Travers et al. (1985) argue that variables in the implemented curriculum are major culprits in explaining America's relatively poor education achievement in comparison with that of other nations. Thus, monitoring changes in student curricula exposure would appear to be critical to informing policymakers about whether our international achievement standing is likely to improve. Further, our commitment to equality of education opportunity would seem to require that policymakers and citizens have access to regular information on the instructional opportunities available to students from different backgrounds.

Policy Questions. Given the fact that the national education goals recently adopted by the President and the Governors strongly emphasize academic preparation and performance, as well as high achievement in math and science, we believe that policymakers would find statistics on the implemented curriculum to be especially useful in addressing the following types of questions:

1. What percentage of students currently enroll in various academic and vocational courses? How is this changing over time?
2. Are increasing numbers of various groups of students enrolling in academic and vocational classes?

3. To what extent are schools offering academic and vocational courses?

4. Within particular subject areas, what topics are covered? How much time and emphasis are allocated to topics? Are patterns of topic coverage changing over time?

5. Do students from different backgrounds have equal access to and choice of different subjects and topic areas?

2. Teaching Quality in Subject Area

Rationale. While experts do not always agree on exact definitions and characteristics of teaching quality, there is an accumulation of research that identifies some indicators of quality and that validates their importance for enhancing student academic performance. In their sourcebook on education indicators, Shavelson, McDonnell, and Oakes (1989) maintain that the knowledge and skills of the teacher are important predictors of teaching quality. Their review of the research showed that academic knowledge and preparation in a teacher's subject area is related to student learning. This relationship varies by subject, with teacher preparation in science and math being particularly important.

At the national and State levels, the academic and professional preparation of teachers and teacher certification for a specific teaching assignment are important policy-relevant indicators of the degree to which teachers in a subject area meet minimum State requirements. The policy interest here is the match between preparation and certification of teachers and their teaching assignments. Data on teacher preparation and certification also provide a starting point for measuring teacher shortages and demand by subject (e.g., the extent of the shortage of certified science teachers in New York).

Finally, Porter (1989) notes several characteristics of good teaching, many of which appear amenable to regular and systematic measurement. For example, good teaching makes efficient use of student time and is carefully constructed to enhance the possibility that students actively participate in the learning process rather than passively absorb what they are told. The amount of time spent in lecture and independent seatwork is kept in balance by instructional strategies that provide for student discussion and cooperative, team, and hands-on activities.

Effective teachers also clarify for students what is to be learned, and why, and translate subject matter and pedagogical knowledge into conditions that enhance student learning. Such teachers also accept appropriate responsibility for student success or failure in achieving desired outcomes.

Policy Questions. These research findings suggest that policymakers would be interested in data that address the following questions related to the quality of teaching:

1. What is the academic and professional preparation of teachers assigned to a given subject area?
2. What proportion of teachers assigned to a subject or field are not certified in that subject or field?
3. What types of students are exposed to teachers who are assigned out of field? What courses do such teachers instruct?
4. How do teachers allocate class time?
5. To what extent do teachers employ appropriate instructional strategies that engage students in active learning?
6. To what extent do teachers accept responsibility for student success and failure in achieving desired outcomes?

3. School Environment

Rationale. The literature on planned change, staff development, and effective schools suggests that those in the best position to improve schools are the staff in the schools. A productive environment promotes and nurtures collaborative decisionmaking and staff involvement in the planning and evaluation of school programs. A self-directed school environment leads to greater staff responsibility for successful teaching and increased learning, and it also creates a climate for school changes to occur.

Moreover, schools engaged in change and improvement processes are likely to be more successful in creating an environment conducive to higher academic achievement. Schools committed to student learning are characterized by high teacher expectations for student success, student support for academics, a large number of academic courses available, and systems for monitoring and rewarding academic achievement.

Policy Questions. High priority school-level policy indicators in this sub-domain are recommended in three specific areas: academic emphasis, conduciveness to learning, and the decisionmaking environment. We expect that such measures would be useful to policymakers to help answer the following types of questions:

1. Is there a school-wide focus on academic achievement for all students (school academic emphasis)?
2. What are the course requirements for graduation?
3. To what degree are schools safe, disciplined, and drug-free?
4. To what degree do schools have a shared decisionmaking process on curriculum and instruction issues?

B. Current National Data Collections: Their Limitations and Potential Strategies for Improvement

1. Implemented Curriculum

Until recently, the NCES longitudinal studies (National Longitudinal Study-1972 [NLS], High School and Beyond, and the National Education Longitudinal Study: 1988 [NELS:88]), the National Assessment of Educational Progress (NAEP) Transcript Study, and the International Association for the Evaluation of Educational Achievement (IEA) studies were the only sources of national data on the implemented curriculum. These surveys include data on courses in which students are enrolled. Class type (track) data have been collected, for example, by the IEA studies (Educational Testing Service 1987, NCES 1985) as well as by the NCES longitudinal studies (NCES 1981a-b and 1989a-b) and the NAEP transcript studies (Educational Testing Service 1989). Longitudinal studies, in particular, permit comparisons to be made over time (1972, 1980, 1987, and 1990) and among population subgroups on such questions as the percentage of students enrolling in different academic and vocational courses. In addition, a national school "Offerings and Enrollments Survey" was conducted in 1982 through High School and Beyond (NCES 1982), and another is planned for NELS:88 in 1992 (NCES 1989e). Although these national studies are of high quality, they do not provide State-level estimates.

Information on ***specific topic coverage*** within subject areas has been available from the international IEA and the NCES longitudinal studies. In the IEA math and science studies, teachers were asked whether students in their classes have had the opportunity to learn the content of a series of items, about the perceived degree of newness of content topics, about methods used in teaching content, and about the reasons for using or not using various interpretations of content.

NELS:88 "Base-Year" (8th grade) and "First Followup" (10th grade) teacher questionnaires include some items on topic coverage and emphasis for mathematics, science, reading, and social studies (NCES 1989b-c). For example, in 8th-grade math, topics include categories such as fractions, ratios and proportions, and geometry.

In 1988, NCES initiated the Schools and Staffing Survey (SASS), which provides national and State-level estimates of the time allocated to subject-area coverage at the elementary grade levels (NCES 1989f). This survey is to be repeated in 1991 and every two years thereafter; thus, trends on this dimension could be regularly monitored. In addition, the Council of Chief State School Officers

(CCSSO) has recently begun collecting State-level administrative data on math and science course-taking patterns at the secondary level (Council of Chief State School Officers 1989).[19]

These two new data sources attempt to address the primary weakness we have identified in the current collection and reporting system in this area: ***the absence of comparable, high-quality State-level data on student exposure to specific academic and vocational courses***. The need for such data is particularly acute at the secondary level. While the current CCSSO project represents a useful first step in addressing this need, it also serves to illustrate the considerable difficulties that must be overcome in developing such a measure. State-level aggregate data covering the areas of math and science are not available from some States, and among participating States, substantial efforts to "crosswalk" State records to a common reporting format were often necessary. NCES, the CCSSO, and the States need to continue to work cooperatively to develop a common system for collecting and regularly reporting accurate and comparable data on student course-taking. NCES also needs to examine the reliability and usefulness of estimates derived from the SASS collection on the time teachers report they allocate to different subject areas in the elementary grades.

Another weakness in the current data system is the absence of detailed information on topic-area coverage (e.g., weeks or class periods spent on topics) as well as specific instructional techniques. As noted earlier, the NELS:88 survey does include topic coverage items. However, the variables tend to be rather broad, and the time spent on topics is not included.

Creating valid and reliable measures at the topic-area level is critically important because, as research has consistently shown, similarly labelled courses (such as "Beginning Algebra") often cover substantially different content elements. Furthermore, the movement toward interdisciplinary course offerings may render traditional broad curriculum descriptors even less useful in the future.[20]

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[19] This project is funded by a National Science Foundation grant.

Given the status of current national collections and the statistical "state of the art," the short-term data improvement objective with respect to measures of specific topics covered would not be to produce State-level estimates. Rather the goal would be to regularly report currently available, relevant national-level statistics describing student "opportunities to learn" different topics, as well as how these opportunities might differ for different types of students and how they are changing over time. In the longer term, the development of better measures of curriculum topic areas and their breadth and depth of coverage would be useful. This will require considerable new research as well as validation studies that pilot the newly developed measures. Ultimately, the objective would be to regularly report such data at both the national and State levels. The recent identification of national education goals may point to specific curriculum indicators on which initial attention should be focused and at what grades. For instance, the goal of enhanced student achievement for grades 4, 8, and 12 in English, mathematics, science, history, and geography suggests initial development of content coverage measures and allied indicators in these areas and grades.

2. Teaching Quality in Subject Area

In general, data from State administrative records systems and cross-sectional surveys are potentially available to address questions regarding basic teacher qualifications, while information on classroom instructional practices can be obtained from NAEP and from NCES longitudinal surveys. The previously noted CCSSO science-math indicators project reports State-by-State data on teacher assignments by certification status in six science fields, mathematics, and computer science for the 1988-1989 school year (Council of Chief State School Officers 1989). The data collection and reporting will be repeated for the 1989-1990 school year, and CCSSO expects 40 States to report these data from their teacher personnel files and certification records. Because high school enrollment data are also collected in this study for specified mathematics and science subjects, the opportunity exists in the participating States to relate trends in teacher certification with subject area enrollments.

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[20] This is not meant to argue against the importance of collecting and reporting information at the broad "content domain" level. It is to recognize, however, the inherent limitations of such data, and therefore, the need for more detailed topic area collections in order to provide valid and reliable measures on such salient topics as student "opportunity to learn."

In this study, out-of-field teachers are divided into two categories--teachers assigned more than 50 percent of the time to a subject/field (primary assignment) and teachers assigned less than 50 percent of the time to a subject/field (secondary or other assignment). Ideally, an FTE statistic could be used to generate one figure, but about half the States do not collect teacher assignments by period or time.

The NCES Schools and Staffing Survey collects data from representative samples of teachers, schools, and districts (NCES 1989f). A major purpose of SASS is to provide periodic indicators of teacher supply and demand. The teacher survey is designed to collect and report data at the national and State levels on the numbers and characteristics of teachers, including specific teaching assignments and teacher preparation (degrees, experience, course credits, staff development). The data include assignment by certification and teachers' self-reports on whether they are qualified in their fields of teaching assignments.

At the national level, these data are quite complete. However, the State samples in SASS are not sufficiently large in many States to produce valid statistics on teacher supply patterns for particular teaching fields such as biology, physics, and computer science. Thus, SASS would not be able produce State-level estimates of status and trends regarding teaching qualifications for specific subjects. It could, however, provide State estimates within broad subject areas such as mathematics and science and (to examine distributional patterns within States) link this information with school background characteristics such as percent minority and percent eligible for free lunch.

NCES' Recent College Graduates (RCG) Survey is also available to trace national trends on the backgrounds and qualifications of new entrants into the teaching profession (NCES 1989d and 1990a). This survey collects data at two-year intervals from a nationally representative sample of college students one year after graduation, and it reports statistics on new-teacher preparation, certification, and teaching assignments.

NELS:88 includes surveys of teachers and principals, along with student and parent questionnaires (NCES 1990c). One of the major purposes of NELS:88 is to analyze teaching quality in subject areas and its relationship to student background characteristics and outcomes. Measures of teaching quality include questions on teacher preparation (degrees, certification status, experience, course credits, and preservice and inservice staff development and training), assignments, teaching strategies and techniques, time allocation, workload, teacher efficacy, and attribution of responsibility for student outcomes. NELS:88 will provide national statistics on teaching in 8th-, 10th-, and 12th-grade classes, but it cannot at present provide State-level estimates (with the exception of the 11 States that have either "bought into" NELS:88 to obtain a State-representative sample or have large enough representation in the national sample).

NAEP assessments generally include teacher questionnaires that ask about broad teaching strategies and time allocation by subject (Johnson and Zwick 1990). However, the level of detail on this topic is limited (compared with NELS) and the data are not consistently analyzed and reported.

With the exception of the intermittent IEA studies, no national survey has previously measured content-specific instructional techniques, and most likely some development work is needed in this area. In the IEA Mathematics study, teachers were asked to give data on sources of instructional materials, methods used in teaching content, and reasons for using or not using various interpretations of content (NCES 1985). In addition, topic-specific questionnaires were administered, focusing on curricular and cognitive processes on a specific topic along with number of methods and time allocations (e.g., for algebra, fractions).

Considering the data elements that are currently available and the need for policy-relevant indicators of teaching quality, top priority in the short run should be placed on collecting and reporting national- and State-level data on the number of teachers who appear to lack the minimum qualifications necessary to teach in their assigned field. Reliable national estimates of this can be obtained from SASS (based on teacher self-reports of certification) and should be collected and reported with regularity to inform this question and note trends over time.

Uniform and valid State-level data on teacher certification by subject field are not currently available but could conceivably be collected by enlarging the SASS survey sample considerably or by drawing upon State data files (universe of teachers) of certificated staff by field, as demonstrated in the CCSSO science-math indicators project. The former option, while far more costly, would provide richer measures of teacher preparation levels, including--in addition to certification status--college major, courses taken in the area being taught, and self assessment of qualifications to teach in that area.[21]

NELS:88 may demonstrate that national data on such topics as specific instructional strategies and techniques, teacher workload, teacher acceptance of responsibility for student success, how teachers are assessed, the amount of inservice training teachers receive, and allocation of time by teachers are important, valid, and reliable "stand-alone" policy indicators of teaching quality. That is, NELS:88 may show that particular practices in these areas are clearly and consistently associated with higher student outcomes. To the extent that this occurs, periodic data collection at State and national levels should be considered through surveys such as SASS.

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[21] SASS can (and should) be used to provide National-level estimates of these conditions by subject field on a regular basis.

3. School Environment

NCES currently collects substantial data on school environment in both its longitudinal and cross-sectional surveys. High School and Beyond and NELS:88 can provide national data on school academic emphasis, school size and structure, curriculum offerings, discipline, staff development, and the availability and use of "high technology" materials in the classroom (e.g., personal computers and calculators). In addition, NELS:88 "First Followup," which will be tested in 1990, has data elements in the following areas: shared decisionmaking, teacher and principal autonomy, principal leadership, and student drug and alcohol use (NCES 1989c). To the extent feasible, comparisons should be made between the schools serving the NELS 10th-grade cohort and those serving the High School and Beyond 10th-graders of a decade earlier on these dimensions.

The School Effects supplement to NELS:88 will be carried out from 1990 to 1992 at the 10th- and 12th-grade levels in about 270 urban schools (NCES 1990b). The student and teacher samples will be augmented to make it possible to study which aspects of schools and teachers are most "effective" in enhancing student achievement. The primary policy focus is on identifying school and department organizational and management characteristics, and teacher practices and beliefs that relate to higher achievement and other positive student outcomes, especially with poor and at-risk populations. The Schools and Staffing Survey collects data on teacher satisfaction and commitment, school policies, working conditions, student drug and alcohol use, school discipline and violence, grouping and tracking practices, and staff problems (NCES 1989f). Since SASS is a cross-sectional study of schools and does not contain outcome measures, it is impossible to link these school environment variables to changes over time in school effectiveness. However, SASS can provide "snapshots" or gross-level indicators at the national and State levels of the environment in our Nation's schools every two years and can relate these data directly to student and community background characteristics.

The need for measures of drug and alcohol use and crime in the schools has taken on added relevance since the joint declaration of national education goals by the Nation's Governors and the President. As noted, some information from school staff on drug and alcohol use and crime and violence levels can be obtained every two years by NCES through the SASS at both the national and State levels. To obtain additional information on such topics as school policies toward students found to possess or distribute drugs or alcohol, and school curricula and instruction on these matters, would require either additional items on the SASS or the development and administration of a new survey. NCES' Fast Response Survey System (FRSS) could be used for this purpose. The FRSS allows for the administration of short (one-page) surveys to a representative sample of schools on a discrete topic area (NCES 1990b). Another strategy would be for NCES to work cooperatively with other agencies concerned with these issues (e.g., Centers for Disease Control, U.S. Drug Enforcement Agency, Department of Justice) to collect and report the necessary measures.

C. Summary of Recommendations for Improving the Collection and Reporting of School Process Statistics

Although our discussion of school process variables was divided into three sub-domains (implemented curriculum, teacher quality, and school environment), we are struck by the interrelatedness of the areas. Together they describe the context for education. Access to knowledge is provided by the implemented curriculum, but the quality of that curriculum is related to the quality of instruction and the professional conditions for teaching. And both curricular and instructional quality are dependent upon a school environment that has the capacity for continued renewal and that supports a press for academic achievement.

Just as the process sub-domains are interrelated, so too are the data elements. For example, information about patterns of course taking in science and mathematics not only describes the implemented curriculum, but it can also be used to describe the degree of academic emphasis in the school environment. Information about teaching quality, such as the backgrounds of teachers who teach particular kinds of courses, can also be used to describe equality of opportunity for all students to learn important content.

Because school process data make up the least developed domain in the current national education statistical system, it is evident that implementing the improvement recommendations outlined below will frequently require additional research to create conceptually valid measures. It will also require careful consideration of the feasibility, costs, and burdens associated with alternative data collection strategies. More precise definitions of desired data elements, modes of collection, and implementation timeliness must, of course, await the results of this work. Thus, as in the other domains, these recommendations represent broad directions for change that are intended to guide future data improvement work.

The National Forum makes the following six recommendations for improving data collection and reporting in the domain of ***school process statistics***:

1. The National Center for Education Statistics (NCES) should regularly collect and report national and comparable State-level data on student enrollment in academic and vocational secondary courses by race/ethnicity, sex, and other demographic subgroups as feasible and appropriate. To accomplish this, NCES must first develop procedures for ensuring the collection of broadly comparable data across States on secondary-school course offerings. The Office of Educational Research and Improvement (OERI) should also determine the usefulness of collecting State-level data on time

allocated to subjects in the elementary grades (such as that currently collected in the Schools and Staffing Survey [SASS]).

2. NCES should regularly collect and report data at the national level on broad indicators of teacher preparation (e.g., certification status, number of courses taken in teaching area, major field, and preservice and inservice development and training experiences) by specific teaching assignment. Trends on these measures should be related directly to changes in the size of the teacher work force as well as student enrollment patterns (i.e., teacher supply and demand). In addition, NCES should investigate the feasibility of regularly collecting and reporting comparable State-by-State statistics using such measures and of reporting on the numbers of new teachers certified via "alternative" routes.

3. NCES should regularly collect and report data at the national level on student "opportunities to learn" specific instructional topics. Work should begin first on the high-priority subjects included in the national education goals (English, mathematics, science, history, and geography) and then proceed to other subjects. OERI should develop new measures of the depth and breadth of coverage for these topics for possible future collection and reporting at the national and State levels.

4. NCES should regularly collect and report nationally representative data on the school environment including school-level measures of academic emphasis (e.g., curricular offerings and enrollments) and decisionmaking practices. To the extent feasible, NCES should relate such data to important background characteristics of students attending these schools (e.g., sex, race/ethnicity, handicapping condition,

socioeconomic status) as well as key demographic characteristics of the larger school community.

5. In order to measure progress in meeting the national goal of "safe, disciplined, and drug-free schools" (goal No. 6 adopted by the Nation's Governors and the President), NCES or other Federal agencies should regularly collect and report national- and State-level data on drug and alcohol use and on violence in the schools, as well as on policies and programs undertaken to prevent such occurrences. To develop measures of these, NCES should proceed immediately to examine the feasibility of augmenting its current sample surveys (e.g., SASS), mounting a new survey (e.g., using the Fast Response Survey System), or working in concert with other agencies concerned with these issues (e.g., Centers for Disease Control, Drug Enforcement Agency). To the extent feasible, these data should be related to the background characteristics of students and their home communities.

6. OERI should fund special studies to improve the measurement of important school processes including academic emphasis, subject-specific instructional strategies, depth and breadth of content coverage, the use of new technologies in instructional programs (e.g., personal computers), and methods of training teachers and assessing their competence. Newly developed measures created through such special studies may eventually be incorporated into future regular national collections and reports.

Chapter 5

Student Outcome Statistics

A. Rationale and policy questions - p. 85

B. Current data collections and their limitations - p. 88

C. Recommendations for improving collection and reporting - p. 98

This chapter is based on an "idea paper" prepared for the National Forum by Dr. Leigh Burstein of the the Center for Research on Evaluation, Standards, and Student Testing of the University of California at Los Angeles. The draft manuscript for the chapter was written by Mr. Joseph Creech of the Southern Regional Education Board in cooperation with the Forum subcommittee on student outcome statistics chaired by Dr. Lynn Cornett of the Southern Regional Education Board.

Student Outcome Statistics

Prior to the 1980s, parents, legislators, Governors, and leaders of business and industry frequently asked the question, "How are our education dollars being spent?" Today, these same people appear more likely to ask, "What is the result of spending our education dollars?" The Nation's citizens and policymakers increasingly demand information about the results--the outcomes--of schooling. They want to know how students are progressing through the system, what students are learning and achieving, and whether students are being adequately prepared to meet the labor-market demands of an increasingly sophisticated and global economy.

A. Rationale and Important Policy Questions

The information being asked by policymakers about education outcomes for students is reflected in the following types of questions:

- What do our students know? Do they know as much as students in other States and countries?
- How many of our students complete high school? How many drop out? How do our graduation and dropout rates compare with those of other States and the Nation as a whole?
- What do students do after high school? How many attend postsecondary institutions? How many enter the military? How many enter the job market?
- Are achievement levels, completion rates, and the postsecondary-education enrollment and employment status of our students improving, staying the same, or declining over time?

These questions reflect our Nation's growing interest in what students learn throughout their K-12 education and how prepared they are for the transition to postsecondary education, employment, and adulthood as responsible and productive citizens. They also illustrate the need for accurate information that policymakers can use in making decisions about allocating new education resources or reallocating existing ones; continuing current programs or developing new ones; and developing or revising policies, rules, and regulations.

In September 1989 at the education summit in Charlottesville, Va., the President and the Nation's Governors began the process of identifying national goals for education. In February 1990, they announced a set of goals that include dramatic improvements in academic achievement and high school graduation rates over the next decade. Many States have also established or are in the process of establishing education goals of their own that include raising student achievement levels, school completion rates, and postsecondary education achievements and status. Establishing and reporting on national and Statewide outcome measures can provide the States and the Nation with indicators of progress toward these goals.

Because States have the primary responsibility for education, it is important that they be able to assess and compare progress toward important national goals, such as those developed by the Governors and the President. Valid, comparable student outcome measures will improve public understanding of the condition of education and may help mobilize public interest in and support for the Nation's schools. Conversely, the inappropriate collection and reporting of such measures may result in data that are not truly "comparable" or reflective of how well our schools are doing and how much our students are achieving.

Key Principles and Assumptions

In reviewing the current status and adequacy of national statistical collections and reports on student outcomes, we have been guided by the following general principles and assumptions:

1. **Outcome measures alone are not sufficient to answer questions about why things are the way they are.**

Such measures are more likely to be descriptive than diagnostic. They can be likened to a speedometer--it can tell you how fast or slow you are going but not why. If the "pedal is to the metal" and the speedometer shows only 20 miles per hour, you know something is wrong. Determining what is wrong requires additional information that the speedometer is not likely to provide.

2. **Wherever possible, existing measures and data collection instruments should be used.**

In general, improving current and existing instruments and systems to provide additional information or to provide comparable data at the State and national levels should take priority over development of another set of instruments or systems. One strategy for providing additional useful outcome data is to expand the sample of existing national-level surveys to permit reliable State estimates in areas of policy interest. States should have the opportunity to "piggy-back" on these samples and gather data on other issues if they wish.

3. **Improvements should focus on better coordination of existing national surveys.**

Survey samples and data collection from, and linkage of data on, elementary, secondary, and postsecondary education institutions by the National Center for Education Statistics (NCES) through the Common Core of Data (CCD), the Integrated Postsecondary Education Data System, the National Assessment of Educational Progress, and the longitudinal studies (High School and Beyond, National Education Longitudinal Study [NELS], and National Postsecondary Student Aid Study [NPSAS]) could result in less duplication of effort; less burden on individual States, districts, and schools; better measures of outcomes; and better understanding of education processes.

4. **In the short term, sampling offers the quickest and least burdensome method of obtaining data on student achievement that is comparable across States.**

This principle is based on the assumptions that there will be greater coordination in sampling and that individual State samples will be large enough to make State-by-State comparisons.

5. **Reports should be generated on student outcomes to show the following:**

   a. comparisons of States and the Nation with a criterion standard;

   b. trends over time (if this does not restrict improving assessment items and use of innovative testing and measurement techniques);

   c. State comparisons with national norms and the norms of other States; and

   d. comparisons among important subgroups (sex, race/ethnicity, economic status, and language status) at both the national and State levels.

B. Current National Data Collections: Their Limitations and Potential Strategies for Improvement

The ensuing discussion of current national data on student outcomes and their limitations addresses four types of student outcomes:

- Student achievement;
- Student participation and progression;
- Student status after completion of secondary school; and
- Student attitudes and aspirations.

For each we reiterate the policy questions that should be informed by such data, point out the status and limitations of current statistical collections and reports, and recommend specific improvements in the current system.

1. Student Achievement

The regular collection and reporting of student achievement data are necessary to tell us the degree to which students are meeting established education objectives. There are several national collections and reports that provide information on student achievement.

The National Assessment of Educational Progress (NAEP) has been assessing student achievement since 1969. NAEP has several features that make it an ideal system for assessing and monitoring student achievement:

- NAEP reports achievement of 4th, 8th, and 12th grade students on a regular schedule in the areas of reading, mathematics, writing, social studies, geography, and science. This structure makes it possible to report on trends in student achievement over time.
- The grade levels at which testing is done reflect points of transition (grade 4, the transition to more complex reading comprehension and arithmetic operations and understanding; grade 8, the conclusion of arithmetic instruction and transition to college preparatory work in mathematics and other areas; and grade 12, the conclusion of secondary schooling).
- Proficiency levels have been established for reading, writing, mathematics, and science. Thus, meaningful statements about student achievement in meeting specific curricula objectives can be made (Johnson and Zwick 1990, Educational Testing Service 1989b).

Although NAEP provides a regularly reported national measure of student achievement based on a nationwide sample of students, its principal limitation is that comparisons of student achievement in the States cannot be made because the sample is not representative of individual States. As a result, policymakers are forced to turn to other measures of student achievement for State data--measures with severe limitations.

Data on Scholastic Aptitude Test (SAT) and American College Testing Program (ACT) performance are the most prevalent student achievement indicators used nationally and by individual

States in reporting State-level outcomes.[22] Student scores on Advanced Placement tests administered by the College Board are sometimes also used for State-level reporting (Office of Planning, Budget, and Evaluation 1990). The Armed Services Vocational Aptitude Battery (ASVAB) is a data base that could be used to compare achievement of students who do not enroll in college immediately after they graduate from high school. National and State summaries are available for each of these tests.

There are two major reasons why the use of any of these measures to assess student achievement at the State level is problematic. First, the population of test takers is, to a large degree, self-selected and unstable over time. Test takers are not comparable from State to State, and they may not be representative of the total population to be assessed. In addition, changes in the population of test takers over time in a State make even within-State comparisons over time problematic. Second, the content coverage of these measures is limited. This reflects the fact that they were expressly designed for purposes other than comprehensively assessing student achievement.

These problems seriously compromise the usefulness of such measures to guide performance and policy development. However, their widespread use, despite the known limitations, clearly illustrates the importance policymakers attach to regularly reported State-level student achievement data. Thus, in the absence of more appropriate instruments and mechanisms, such measures will continue to be used to gauge State-level student performance.

A pilot project involving 41 States to determine the feasibility of a "State NAEP" holds some promise of providing more comparable State and national data on student achievement.[23] If the pilot proves successful, NAEP should be used to report regularly on student achievement in the States in core subject areas. The State samples should also be large enough to permit analyses of the performance of important subgroups (e.g., racial/ethnic groups, language-minority groups) and different types of education units (e.g., school districts with high/low poverty concentrations) within a State. While the cost of such expansions would be high, the cost is likely to be less than it would be to design and develop a completely new system.

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[22] In addition to their use by several States in monitoring trends in student achievement, these measures have also been reported annually by the U.S. Department of Education in the *State Education Performance Chart* (Office of Planning, Budget, and Evaluation 1990).

[23] A discussion of critical design considerations that should be addressed in the successful implementation of State-level NAEP assessments can be found in a recent technical report by NCES (NCES 1989e).

Our general endorsement of NAEP (or an equivalent type of national assessment instrument with comparable features) and our recommendations for its expansion to the State level do not mean that we wish the general structure of NAEP assessments to remain unchanged. In recent years, the assessment field has turned from "paper and pencil" multiple-choice assessment techniques to broader and more "hands on" measures of student learning, sometimes called performance assessments. NAEP (or its equivalent) should take a leadership role in employing such measurement techniques in its student achievement surveys, and the Federal Government should vigorously pursue research, development, and experimentation with these measures.

In addition, it is essential to have periodic international assessments of student performance, comparing U.S. students with those of other industrialized nations (Educational Testing Service 1989a). Only in this way will we know whether our student achievement levels are meeting an international performance standard. The recently endorsed national goal of improving the international performance of U.S. students in science and mathematics achievement demonstrates the need for this kind of measure.[24]

Finally, although our principal concern is with outcome measures as "stand alone" indicators of the performance of the education system, we also believe that as "The Nation's Report Card," NAEP could help us better understand the reasons for education outcomes. To do this, NAEP achievement results need to be linked with data on student course-taking and student and schooling environments. This could be achieved by collecting additional data through NAEP or by linking NAEP and other national surveys[25]. One strategy that deserves serious consideration by NCES is to link NAEP with NELS by equating items from the two assessment instruments. NELS is an extremely rich source of data on student background characteristics and instructional processes. Building a bridge between these data and NAEP results could produce a powerful tool for analysts to use in unraveling the complex relationships among student characteristics, schooling processes, and student achievement.

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[24] That goal, endorsed by the Nation's Governors and the President, states: "By the year 2000, U.S. students will be first in the world in science and mathematics achievement."

2. Progression Through the Education System

Information on student progress through the education system can inform policymakers about the percentages of students who drop out and complete school and the extent to which these percentages are changing over time.

NCES currently collects State data on numbers of high school completers through the CCD surveys (NCES 1990). Such data have been used in the past to calculate high school completion rates (in addition, dropout rates are often inferred from completion rates). State and national graduation rates are reported in Education Department publications such as the *Condition of Education* (NCES 1989f), the *Digest of Education Statistics* (NCES 1989a), and the *State Education Performance Chart* (Office of Planning, Budget, and Evaluation 1990). The principal weaknesses of the current data on school completion are the lack of comparability and completeness in the data reported by States and the lack of information to determine completion rates for important State subgroups, such as minorities.

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[25] See Baron et al. (1986), Jones (1986) and Spencer (1986) for discussions of technical and substantive issues associated with linkages of this type.

Dropout rates are currently estimated and reported annually by the Bureau of the Census Current Population Survey (Bureau of the Census 1988) as well as in periodic special studies such as the NCES National Household Education Survey (NCES 1989d). However, individual State estimates are not available from these data sources.

Obtaining State-level measures of school dropouts and completers requires some way of tracking students as they move through the system. This can be accomplished through administrative recordkeeping or longitudinal studies of a student sample. Regardless of how the data are obtained, they must be based on common definitions of "dropout" and "program completion" (NCES 1989b). Both methods also require identifying data elements to be collected so that the characteristics of dropouts and program completers can be identified. At a minimum, such descriptive data elements should include sex and race/ethnicity.

NCES longitudinal studies such as High School and Beyond and NELS are potential sources of information on State-level completion and dropout rates.[26] However, State-by-State data and comparisons generally are not available from these sources because the State sample sizes are too small.[27] In addition, because new cohorts for these surveys are begun relatively infrequently (approximately once every eight years), their usefulness in monitoring trends over time is restricted. While studies of this type could theoretically be conducted more frequently or expanded to obtain representative samples of States, the costs would be substantial.

The advantage of using administrative records to report dropout and completion statistics is that once a system of recordkeeping and reporting is developed, it could be used to report comparable State-by-State information (as well as comprehensive within-State data) on an annual basis. Ideally, each State would have a Statewide data base or student information system capable of tracking students as they move from school to school within the State. While few States currently have such systems, the technology is rapidly becoming available. Now is an opportune time to begin to identify the data elements and other information that should be common to all student records.

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[26] The High School and Beyond Survey has previously been analyzed by NCES for this purpose (NCES 1986).

[27] Eleven States have either supplemented the NELS sample or their samples contain enough observations to provide State representative information.

NCES is conducting dropout statistics field tests in 27 States to determine whether it is possible to obtain comparable State-by-State dropout rates by expanding administrative-record reporting through the CCD process (NCES 1989c).[28] If the field test determines that this approach is feasible, it could be implemented nationwide and the results used to report both annual and cumulative (i.e., grades 9-12) dropout rates each year.[29]

Given the recently endorsed national goal on high school completion,[30] it is especially important that we regularly collect and report accurate State-level data on the percentage of high school completers. The Council of Chief State School Officers' Education Data Improvement Project (EDIP) has recently identified variations in how States report such data to the CCD (Clements 1990). Relying on the work of a Task Force convened to discuss where reporting variations exist and to make recommendations for collecting more comparable and complete data, EDIP issued a report that explicitly defined four mutually exclusive categories of "high school completer."[31] The Task Force recommended that NCES collect and report data annually from each State using these school completer categories and that NCES periodically examine and report long-term high school completion rates (through age 24) by State.

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[28] In this field test, an annual dropout is defined uniformly as a student (1) who was enrolled during the previous school year but was not enrolled at the beginning of the current year; (2) who has not graduated from high school or completed a State- or district-approved program; (3) who has not transferred to another public school district, private school, or State- or district-approved program; and (4) and who has not been suspended, expelled, or excused from school due to illness (and who has not died).

[29] The 4-year cumulative dropout rate could be defined as the percentage of 9th-grade students within a State who fail to graduate from high school or complete an alternative certification program or examination and who are no longer enrolled in school for reasons other than death or extended illness. This rate could be estimated using a "synthetic cohort" by aggregating, for a given year, the percentage of such students dropping out of school in each grade (grades 9-12).

[30] The goal stipulates that by the year 2000, the percentage of students graduating from high school will increase to at least 90 percent.

3. Student Status After High School

Data on the status of students after completing high school provides the following information on what happens to recent high school graduates:

- how many enroll in postsecondary institutions;
- how many enter the military; and
- how many enter the labor force.

Potential sources of data in each of these areas are the NCES longitudinal studies. As with completion and dropout data, the current samples are generally too small to provide reliable State-level estimates. However, NCES should continue to offer States the option of supplementing, at their own expense, national longitudinal studies to generate State-level reports.

A complementary strategy is for NCES to investigate whether the desired data could be obtained through better articulation among its own elementary-secondary and postsecondary surveys and between each of these surveys and other national data collections.

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[31] The categories are:

- the number and percent of students receiving regular high school diplomas through traditional programs;
- the number and percent of students receiving regular high school diplomas through nontraditional programs;
- the number and percent of students receiving certificates of attendance or completion;
- the number and percent of students receiving credentials based on passing the GED tests.

One avenue to explore in the area of postsecondary attendance rates is the feasibility of linking the CCD collection of high school graduates by State with the NCES Integrated Postsecondary Education Data System (IPEDS) collection (NCES 1987 and 1988). It may be possible to aggregate totals from the IPEDS survey by State of origin (as well as race/ethnicity and sex, within States) and then combine them with improved CCD counts of high school completers to create a State "college-going rate" statistic. The goal would be to obtain, at least every two years, estimates of the percentage of each States' high school graduates entering different types of postsecondary institutions (two- and four-year colleges, trade schools, etc.) within 12 months of graduation.[32]

Another option in the area of postsecondary education attendance patterns would be for each State to develop its own method for obtaining first-time enrollment data from post-secondary education institutions and then to report its findings directly to the CCD. Regardless of the strategy employed, the number of first-time enrollees who graduated from high schools from each State in the preceding 12 months would provide an important measure of the flow of students from secondary to postsecondary education. These data could also be used to monitor student migration from one State to another in terms of postsecondary attendance.

Information on the military enlistment rate of State high school graduates could potentially be obtained from Department of Defense data, analyzed in conjunction with improved CCD graduate counts. If the enlistment data could be disaggregated by State and reported by race/ethnicity, sex, and age, the resulting measures would indicate, for each of these categories, the percentage of high school completers enlisting in the military within 12 months of graduation.

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[32] Ideally, the percentage of a States' high school graduates who attend postsecondary institutions at any time would be good information to have. However, obtaining that information would require extensive followup and high levels of cooperation between postsecondary institutions and State education agencies, and it would be expensive. It is, thus, not considered a high priority statistical improvement recommendation.

Through Current Population Surveys and the Bureau of Labor Statistics, it is possible to obtain national, regional, and, in some cases, State-level statistics on the employment conditions and status of various age cohorts (Bureau of the Census 1990, Bureau of Labor Statistics 1989). It may be possible to coordinate NCES data collections with these surveys in order to determine the percentage of a States' recent high school graduates who enter the civilian labor force and are gainfully employed.

Should any or all of these attempts prove unsuccessful in better coordinating current national data collections to provide State-level data on student postsecondary status, other strategies should be considered. One would be for NCES to provide leadership in developing a common set of questions that States might use to design their own surveys to address these issues. For example, NCES could sponsor a demonstration project that would provide a model or models that States could use to acquire their own data. The NCES longitudinal studies could then provide a national benchmark with which to compare State or district findings.

4. Student Attitudes and Aspirations

Student attitudes about their education and schooling experiences are not generally thought to be education outcomes. Yet, periodically measuring student attitudes toward school and learning, self-esteem and confidence, level of satisfaction with their schooling experiences, and future career aspirations can provide important indicators of a number of valued education outcomes. Such measures could help to address a number of high-interest policy issues including the extent to which today's students are likely to be "life-long learners," their anticipated job performance, and the adequacy of our future labor supply in desired fields. Assessing trends over time on student attitudes and aspirations can be particularly illuminating, as can comparisons between major demographic subgroups. However, while information on student attitudes is already gathered through NAEP and

NCES' longitudinal studies, trends over time have not been reported, and comparable State-level data are absent.

While the National Forum believes that our national education data system should ultimately include measures of student attitudes and aspirations, we also believe that the creation and reporting of such measures should proceed judiciously. Because the regular monitoring and reporting of this type of information at the State and national levels has been so uncommon, developmental work in this area is especially needed. Such work needs to focus on both issues of the technical adequacy of potential attitude/aspiration measures and their perceived usefulness to members of the education policy community.

C. Summary of Recommendations for Improving the Collection and Reporting of Student Outcome Statistics

Policymakers at the national, State, and local levels want to know more about the results of the education process. National, regional, and State goals for education are being identified. To monitor progress in reaching these goals, it will be necessary to obtain reliable and credible outcome measures that are comparable across States. Because of the interest in reducing disparities that exist in current levels of education achievement and attainment among important subgroups of the population, all outcome measures should be gathered and reported by race/ethnicity and sex.

Student outcome measures should be gathered in the four sub-domains--student achievement, student participation and progression, student status after high school, and student attitudes and aspirations.

The National Forum makes the following 11 recommendations for improving data collection and reporting in the domain of ***student outcome statistics*** across the four key sub-domains:

Student Achievement

1. Comparable and uniform student achievement measures (using the State National Assessment of Educational Progress [State-NAEP], if proven valid and reliable) should provide State-by-State comparisons of knowledge in core content areas (reading, writing, mathematics, science, history and geography) in grades 4, 8, and 12 at least once every four years. Knowledge in other subject areas such as literature, music, art, computer applications, and civics should also be periodically assessed to the extent feasible.

2. Differences in performance among important subgroups of students should be examined and reported at the national and State levels. Subgroups should include those traditionally associated with sex, race and ethnic origin, economic status, and language status. Provision should be made for States, if they wish, to analyze the sample of the student achievement study in their States so that comparisons could be made among education units by significant subgroups.

3. Trends in student performance over time should be reported for all grades and subjects in which the achievement data are collected at the national and State levels. However, reporting trends over time should not restrict the development and use of new assessment forms that tap a broader range of student proficiencies than those typically associated with "paper and pencil" tests.

4. The Office of Educational Research and Improvement (OERI), including the NAEP program, should give priority to research, development, and experimentation with new assessment techniques that can provide broader and more sophisticated measures of student performance.

5. State-by-State student achievement measures should include, in each administration, a performance assessment component(s). OERI should enter into cooperative research and development arrangements with State and local large-scale assessment programs.

6. Student achievement results should be scaled in a way to allow comparisons with international achievement measures such as those from the International Assessment of Educational Progress (IAEP) and the International Association for the Evaluation of Educational Achievement (IEA). Comparisons with international achievement measures should be made on a regular basis in order to monitor progress in meeting the recently developed national education goal adopted by the Governors and the President.

7. Information should be collected on courses of study completed at the time of national and State student achievement assessments so that links might be made between courses/curriculum completed and assessment results.

8. Discussion should continue into possible linkages of specific features of the NAEP and NELS survey instruments as well as better coordination of the two surveys by NCES. One possibility is to equate the NELS achievement instruments to the NAEP items.

Student Participation and Progression

9. NCES, in cooperation with State departments of education, should obtain and periodically report comparable State-by-State data on school dropouts and completers by race/ethnicity, sex, and other important subgroups. The specific measures calculated should include:

- An annual dropout rate as defined in the NCES Dropout Field Test or as modified by the results of the field test;
- A synthetic cumulative dropout rate; and
- A school completion rate incorporating, to the extent feasible, the recommendations of the CCSSO School Completion Task Force.

Student Status After High School

10. NCES, in cooperation with other Federal agencies and State departments of education, should investigate the feasibility of obtaining and periodically reporting comparable State-by-State data on the following subjects by race/ethnicity, sex, and other important subgroups:

- The percentage of high school graduates who enroll in different types of postsecondary institutions within a year of graduation;
- The percentage of high school graduates who enter the military within a year of graduation;
- The percentage of high school graduates who enter the civilian labor force within a year of their graduation; and
- The percentage of high school graduates in the civilian labor force who are employed/not employed one year after their graduations.

Student Attitudes and Aspirations

11. OERI should fund special studies related to the regular collection and reporting of data on student attitudes toward education and schooling and future aspirations. These studies should investigate both the technical validity and reliability of potential statistics of this type and their perceived usefulness for purposes of education policymaking and planning.

Chapter 6

Improving Our National Education Data System: Summary and Conclusions

Improving Our National Education Data System: Summary and Conclusions

After several months of work, and with the support of a cadre of national experts and education stakeholders, the National Forum on Education Statistics has developed an initial action agenda for improving the usefulness of nationally collected and reported education statistics. This agenda is composed of 36 specific data improvement recommendations addressing four key data domains--***student and community background statistics*, *education resource statistics*, *school process statistics***, and ***student outcome statistics***. These recommendations, which appear in Chapters 2-5, are restated here:

For the domain of *student and community background statistics*, the National Forum recommends the following:

1. Using data extracted from State administrative record systems on the universe of public school students, the National Center for Education Statistics (NCES) should annually collect and report State- and national-level aggregates on the following student background characteristics:
   - Fall membership counts by race/ethnicity by grade; and
   - Fall membership counts by sex by grade.

2. NCES should annually report State- and national-aggregate statistics collected by other agencies on the following student subgroups:
   - Handicapped students served, by type of handicap;
   - Free lunch participants; and
   - Participants in compensatory, bilingual, and vocational education programs.

3. NCES, in cooperation with other Federal and State agencies, should work toward the regular collection and reporting of the following State and national student background statistics:

- Limited-English-proficiency status;
- Student handicapping conditions by race;
- Participation in prekindergarten educational programs;
- Student health status (e.g., nutrition, health-related absenteeism, and drug and alcohol use); and
- Student mobility and migrant status.

4. The Office of Educational Research and Improvement (OERI) should fund special studies investigating the efficacy of using free-lunch data as proxies for student socioeconomic status (SES), and the costs, benefits, and burdens associated with regularly collecting and reporting alternative SES measures. These studies should specifically examine issues of validity, reliability, and usefulness of free-lunch and alternative measures for different types of reporting and analysis as well as administrative issues related to the collection and reporting of such measures.

5. NCES should develop the capacity to collect and report data on private school student background characteristics parallel to those being developed for the universe of public school students. Data might come from the NCES Private School Survey and the Schools and Staffing Survey, and they should be reported as national aggregates and, to the extent feasible, as State aggregates.

6. In reporting measures of educational resources, school processes, and student outcomes from its sample and universe surveys, NCES should attempt, to the extent feasible and appropriate,

to provide disaggregated data using the following student and community background characteristics:

- Sex;
- Racial/ethnic group affiliation;
- Limited-English-proficiency status;
- Community wealth; and
- Family income.

7. NCES should consider reporting distributional patterns for the following student and community background variables in conjunction with particular resource, process, and outcome measures:

- Public/private school enrollment;
- Student employment status;
- Measures of family background (e.g., parents' education, language spoken in the home);
- Student mobility; and
- Student handicapping condition.

For the domain of *education resource statistics*, the National Forum recommends the following:

1. The National Center for Education Statistics (NCES) should collect and report a set of national- and State-level education revenue, expenditure, and human resource measures on an annual basis, using data items from the "National Public Education Financial Survey" and the Common Core of Data (CCD) Nonfiscal Surveys.

2. NCES should continue to provide training and technical support to States to "crosswalk" data elements specified by the current CCD Financial Survey as well as other assistance necessary for meeting the Handbook 2R2 classifications.

3. NCES and other Federal agencies should investigate the feasibility of developing a State-by-State statistical measure to adjust education resource data for differences among States and to report education resource trends over time in constant dollars.

4. NCES and other Federal agencies should investigate the feasibility of developing a State-by-State statistical measure to adjust salary data for differences among States and to report education salary trends over time in constant dollars.

5. NCES and other Federal agencies should engage in research and development efforts that will enable them to make accurate, comparable, and informative international comparisons of U.S. education resource commitments with those of other industrialized nations.

6. NCES should continue to collect and report data from the CCD aggregated to the State level on an annual basis. However, the Center should, over time, develop policies and procedures for the regular collection and reporting of district-level resource data. In moving toward district-level resource collections, NCES should be particularly cognizant of (1) identifying

potential reports such data could generate and (2) the capacity of States to provide district-level data.

7. NCES should expand the annual CCD "State Administrative Records Survey" to include: (1) an average teacher salary measure that takes into account contract, career ladder, and other special incentive pay and (2) a teacher salary measure that takes into account degree status and experience.

8. NCES should make a long-term commitment to establishing a program- and functionally based accounting system. This will provide NCES, policy analysts, and other education researchers with better information about how education funds are spent and make it possible to relate program resources to the specific education needs of students. The particular program levels to be collected should be determined ***after additional study***, taking into account the costs and burdens associated with the development of comparable definitions of relevant program categories across different locales.

9. NCES should expand the Federal Government's survey of ***private*** schools to include resource information. Wherever feasible, the Center should report private-school resource data from its surveys on a State-by-State basis.

10. NCES should establish, as a long-term objective, the collection of data regarding the status of ***buildings***, including the number, age, condition, and facility needs of the Nation's schools.

11. NCES should regularly report data on the number and descriptive characteristics (i.e., age, sex, race) of instructional, instructional support, and noninstructional staff in the Nation's schools. Such data should be reported at the State level to the extent feasible.

12. NCES should establish, as a long-term objective, measures that indicate total dollar investments in education personnel. These measures should be specific to different types of staff (e.g., teachers, administrators, instructional aides) and include both direct compensation expenditures (salaries) and indirect compensation (fringe benefits).

For the domain of *school process statistics*, the National Forum recommends the following:

1. The National Center for Education Statistics (NCES) should regularly collect and report national and comparable State-level data on student enrollment in academic and vocational secondary courses by race/ethnicity, sex, and other demographic subgroups as feasible and appropriate. To accomplish this, NCES must first develop procedures for ensuring the collection of broadly comparable data across States on secondary-school course offerings. The Office of Educational Research and Improvement (OERI) should also determine the usefulness of collecting State-level data on time allocated to subjects in the elementary grades (such as that currently collected in the Schools and Staffing Survey [SASS]).

2. NCES should regularly collect and report data at the national level on broad indicators of teacher preparation (e.g., certification status, number of courses taken in teaching area, major field, and preservice and inservice development and training experiences) by specific teaching assignment. Trends on these measures should be related directly to changes in the size of the teacher work force as well as student enrollment patterns (i.e., teacher supply and demand). In addition, NCES should investigate the feasibility of regularly collecting and reporting comparable State-by-State statistics using such measures and in reporting on the numbers of new teachers certified via "alternative" routes.

3. NCES should regularly collect and report data at the national level on student "opportunities to learn" specific instructional topics. Work should begin on the high-priority subjects included in the national education goals (English, mathematics, science, history, and geography) and then proceed to other subjects. OERI should develop new measures of the depth and breadth of coverage for these topics for possible future collection and reporting at the national and State levels.

4. NCES should regularly collect and report nationally representative data on the school environment including school-level measures of academic emphasis (e.g., curricular offerings and enrollments) and decisionmaking practices. To the extent feasible, NCES should relate such data to important background characteristics of students attending these schools (e.g. sex, race/ethnicity, handicapping condition, socioeconomic status) as well as to key demographic characteristics of the larger school community.

5. In order to measure progress in meeting the national goal of "safe, disciplined, and drug-free schools" (goal No. 6 adopted by the Nation's Governors and the President), NCES or other Federal agencies should regularly collect and report national- and State-level data on drug and alcohol use and violence in the schools, as well as on policies and programs undertaken to prevent such occurrences. To develop measures of these, NCES should proceed immediately to examine the feasibility of augmenting its current sample surveys (e.g., SASS), mounting new surveys (e.g., using the Fast Response Survey System), or working in concert with other agencies concerned with these issues (e.g., Centers for Disease Control, Drug Enforcement Agency). To the extent feasible, these data should be related to the background characteristics of students and their home communities.

6. OERI should fund special studies to improve the measurement of important school processes including academic emphasis, subject specific instructional strategies, depth and breadth of content coverage, the use of new technologies in instructional programs (e.g. personal computers), and methods of training teachers and assessing their competence. Newly developed measures created through such special studies may eventually be incorporated into future regular national collections and reports.

For the domain of *student outcome statistics*, the National Forum recommends the following:

Student Achievement

1. Comparable and uniform student achievement measures (using the State National Assessment of Educational Progress [State-NAEP], if it is proven valid and reliable) should provide State-by-State comparisons of knowledge in core content areas (reading, writing, mathematics, science, history, and geography) in grades 4, 8, and 12 at least once every four years. Knowledge in other subject areas such as literature, music, art, computer applications, and civics should also be periodically assessed to the extent feasible.

2. Differences in performance among important subgroups of students should be examined and reported at the national and State levels. Subgroups should include those traditionally associated with sex, race and ethnic origin, economic status, and language status. Provision should be made for States, if they wish, to analyze the sample of the student achievement study in their States so that comparisons can be made among education units by significant subgroups.

3. Trends in student performance over time should be reported for all grades and subjects in which the achievement data are collected at the national and State levels. However, reporting trends over time should not restrict the development and use of new assessment forms that tap a broader range of student proficiencies than those typically associated with "paper and pencil" tests.

4. The Office of Educational Research and Improvement (OERI), including the NAEP program, should give priority to research, development, and experimentation with new assessment techniques that can provide broader and more sophisticated measures of student performance.

5. State-by-State student achievement measures should include, in each administration, a performance assessment component(s). OERI should enter into cooperative research and development arrangements with State and local large-scale assessment programs.

6. Student achievement results should be scaled in a way that allows comparisons with international achievement measures such as those from the International Assessment of Educational Progress (IAEP) and the International Association for the Evaluation of Educational Achievement (IEA). Comparisons with international achievement measures should be made on a regular basis in order to monitor progress in meeting the recently developed national education goal adopted by the Governors and the President.

7. Information should be collected on courses of study completed at the time of national and State student achievement assessments so that links might be made between courses/curriculum completed and assessment results.

8. Discussion should continue into possible linkages of specific features of the NAEP and the National Education Longitudinal Study (NELS) survey instruments as well as better coordination of the two surveys by the National Center for Education Statistics (NCES). One possibility is to equate the NELS achievement instruments to the NAEP items.

Student Participation and Progression

9. NCES, in cooperation with State departments of education, should obtain and periodically report comparable State-by-State data on school dropouts and completers by race/ethnicity, sex, and other important subgroups. The specific measures calculated should include:

    - An annual dropout rate as defined in the NCES Dropout Field Test or as modified by the results of the field test;

- A synthetic cumulative dropout rate; and
- A school completion rate incorporating, to the extent feasible, the recommendations of the Council of Chief State School Officers (CCSSO) School Completion Task Force.

Student Status After High School

10. NCES, in cooperation with other Federal agencies and State departments of education, should investigate the feasibility of obtaining and periodically reporting comparable State-by-State data on the following subjects by race/ethnicity, sex, and other important subgroups:

    - The percentage of high school graduates who enroll in different types of postsecondary institutions within a year of graduation;
    - The percentage of high school graduates who enter the military within a year of graduation;
    - The percentage of high school graduates who enter the civilian labor force within a year of their graduation; and
    - The percentage of high school graduates in the civilian labor force who are employed/not employed one year after their graduations.

Student Attitudes and Aspirations

11. OERI should fund special studies related to the regular collection and reporting of data on student attitudes toward education and schooling and their future aspirations. These studies should investigate both the technical validity and reliability of potential statistics of this type and their perceived usefulness for purposes of education policymaking and planning.

Expectations and Future Actions

The recommendations contained in the *Guide To Improving the National Education Data System* provide an ambitious but essential initial blueprint for reform of the national education data collection and reporting system. Implementing them will considerably alter the landscape of the current national education statistics system.

Each of the recommendations outlined in the *Guide* have implications for changing particular features of current education data collection and reporting efforts. Figures 3-6 summarize, for each domain of the data agenda, the specific agencies and national surveys that may be affected by implementing each of the *Guide's* statistical improvement recommendations. For example, implementing the first recommendation on student and community background statistics would probably require an enhancement of the NCES Common Core of Data surveys and necessitate additional State-level data collection responsibilities as well. However, while implementation of the second recommendation in this domain is likely to require enhanced ***Federal-level*** coordination of existing collections, it should not impose any additional responsibilities on State education agencies. In fact, a more coordinated Federal collection effort incorporating variables such as free-lunch and handicapped-student counts could potentially reduce State administrative data burdens.

It is important to make four points about the likely data-development implications of the recommendations in the *Guide*. First, it is likely that many of the recommendations can be implemented ***through enhancements or modifications of existing surveys*** rather than by engaging in completely new data collections. This makes the recommendations more feasible and less costly than might otherwise be the case.

Figure 3

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Student and Community Background Statistics

(Appearing on Pages 105–107 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational Longitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
State and national fall enrollment counts by grade, by race and sex	School/District and State Nonfiscal Surveys								xx
State and national "special needs" student counts	School/District and State Nonfiscal Surveys					OSERS OESE OVAE OPBE	FNS		
Development of new State and national aggregate student counts						OSERS OPBE OBEMLA OME OCR	ACYF Census CDC	Counts of: LEP, Handicap by Race, Pre-K, "At Risk," Student Mobility	xx
Improved socio-economic status measures							Census FNS	Free-lunch Counts and Potential Alternatives	
Private school student background characteristics	Private School Survey	Private School Component							
Analysis of education data by sex, race, LEP status, wealth & income	All Components	All Components	All Components	All Components	All Collections	OBEMLA OCR OPBE	Census BLS		

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

ACYF = Administration for Children, Youth, and Families, Department of Health and Human Services
BLS = Bureau of Labor Statistics, Department of Labor
CDC = Centers for Disease Control, Department of Health and Human Services
Census = Bureau of the Census, Department of Commerce
FNS = Food and Nutrition Service, Department of Agriculture
NCES = National Center for Education Statistics
OBEMLA = Office of Bilingual Education and Minority Language Affairs
OCR = Office for Civil Rights
OESE = Office of Elementary and Secondary Education
OME = Office of Migrant Education
OPBE = Office of Planning, Budget, and Evaluation
OSERS = Office of Special Education and Rehabilitative Services
OVAE = Office of Vocational and Adult Education

Figure 3 (Cont.)

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Student and Community Background Statistics

(Appearing on Pages 105–107 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational Longitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Analysis of education data by other selected background characteristics	All Components	All Components	All Components	All Components	All Collections	OSERS OME OPBE	Census BLS		

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

BLS = Bureau of Labor Statistics, Department of Labor

Census = Bureau of the Census, Department of Commerce

NCES = National Center for Education Statistics

OME = Office of Migrant Education

OPBE = Office of Planning, Budget, and Evaluation

OSERS = Office of Special Education and Rehabilitative Services

Figure 4

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Education Resource Statistics

(Appearing on Pages 108-110 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational Longitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Revenues, expenditures, and human resources aggregate data	Fiscal and Nonfiscal Surveys								xx
Training & support for fiscal crosswalk and fiscal redesign	Fiscal Survey								
State resource cost adjuster								State Resource Cost Adjuster	
State salary cost adjuster								State Salary Cost Adjuster	
International cost of education comparisons						OPBE	Census	International Cost of Education Comparisons	
District level finance collections	Fiscal Survey						Census	Local Fiscal Collection	xx

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

Census = Bureau of the Census, Department of Commerce

NCES = National Center for Education Statistics

OPBE = Office of Planning, Budget, and Evaluation

Figure 4 (Cont.)

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Education Resource Statistics

(Appearing on Pages 108–110 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational Longitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Teacher salary	Fiscal Survey								xx
Program accounting system								Program Accounting	
Private school resource information	Private School Component								/
School facilities data								Facilities Data Collection	xx
Numbers and characteristics of school staff	School/District and State Nonfiscal Surveys								xx
Fiscal investments in personnel								Fiscal Investment in Education Personnel	xx

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

NCES = National Center for Education Statistics

Figure 5

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: School Process Statistics

(Appearing on Pages 111-112 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational Longitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Course enrollments	State Nonfiscal Survey	Teacher Components District/School Components					NSF	Academic and Vocational Coursetaking	xx
Teacher preparation and teacher supply and demand	State Nonfiscal Survey	School/District Components Teacher Components					NSF	Teacher Preparation Teacher Supply and Demand	xx
Topic/content coverage and opportunity to learn		Teacher Components	Teacher Components					Topic/Content Coverage Opportunity to Learn	
School environment		Public and Private School Components	School Components						
Drug/alcohol use and school violence		School Components			Fast Response Survey System (FRSS)	OPBE	CDC DEA	Drug/Alcohol Use School Violence	
Research and development on school process measures								Improved School Process Measures	

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

CDC = Centers for Disease Control, Department of Health and Human Services
DEA = Drug Enforcement Administration, Department of Justice
NCES = National Center for Education Statistics
NSF = National Science Foundation
OPBE = Office of Planning, Budget, and Evaluation

Figure 6

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Student Outcome Statistics

(Appearing on Pages 113-115 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational ongitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Student achievement by State				Student Components**					xx
Subgroup differences in student achievement				Student/Teacher and School Components					xx
Trends in student achievement				Student/Teacher and School Components					
Research and development in student achievement measures								More Sophisticated Student Outcome Measures	
Performance assessment				Student Components				Performance Assessment	
International comparisons				Student Components	IAEP/IEA				

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

** = If proven valid and reliable

IAEP = International Assessment of Educational Progress

IEA = International Association for the Evaluation of Educational Achievement

NCES = National Center for Education Statistics

Figure 6 (Cont.)

Potential Data Development Implications of National Forum on Education Statistics Guide Recommendations: Student Outcome Statistics

(Appearing on Pages 113-115 of National Agenda Guide)

Data Implications for:

Recommendations	NCES Common Core of Data Surveys (CCD)	NCES Schools and Staffing Survey (SASS)	NCES National Educational Longitudinal Survey (NELS)	NCES National Assessment of Educational Progress (NAEP)	Other NCES Data Collections	Other U.S. Department of Education Data Collections (Agency)	Other Federal Government Data Collections (Agency)	New Research & Development Initiatives (Development Area)	State Collections or Subsidies* (xx = Yes)
Course enrollment/ achievement linkages				Student/Teacher and School Components					
NAEP/NELS linkages								NAEP/NELS Linkages	
High school dropouts and completers	School/District and State Nonfiscal Surveys								xx
Postsecondary educational experiences	School/District and State Nonfiscal Surveys				Integrated Postsecondary Education Data System		BLS Department of Defense		xx
Student attitudes/ aspirations								Student Attitudes/ Aspirations	

*Where indicated, States would have to commit additional effort/resources to implement the recommendations.

BLS = Bureau of Labor Statistics, Department of Labor

NCES = National Center for Education Statistics

Second, a basic ***data system infrastructure*** is being created through the National Cooperative Education Statistics System for implementing many of the statistical improvements we contemplate. For example, the Cooperative Education Data Collection and Reporting Standards (CEDCARS) project, sponsored by the Cooperative System, is in the process of developing basic criteria for acceptable education data collection and reporting across a wide range of agencies and types of data.

Third, there appears to be a rough ***balance of burdens*** between the States and the Federal Government associated with implementing the recommended improvements. While some of the recommendations would probably entail additional State data collection or financial commitment (chiefly the Common Core of Data enhancements and State "buy-ins" to NCES sample surveys), others represent changes in NCES sample surveys and the types of reports these surveys regularly generate, requests for improved Federal data coordination, and expanded research and development activity.

Finally, it is clear that although some recommendations can be implemented relatively quickly, others would ***require considerable time***. Nearly all the recommendations in the area of school processes, for example, contemplate additional research and development work. Conversely, many of the recommendations in the area of improved student achievement measures are already consonant with current NCES data-improvement initiatives.

It is also important to point out again that the National Forum is not an administrative agency. We can recommend but not dictate. We fully expect some parts of this agenda to be embraced more readily than others by those at the Federal, State, and local levels who would bear the responsibility for making the changes needed to implement new national statistical policies.

What are our expectations for this document? Why have we engaged in this laborious consensus-building enterprise to develop recommendations that we have no authority to implement? We have created this *Guide* because we expect it to ***begin a systematic process of national statistical***

reform in education. We fully recognize that the ultimate decisions about what data system improvements actually occur will depend on many factors, including the cost of proposed improvements, who will pay for them, the "fit" between the priorities expressed here and those of implementing agencies, and the way in which the proposed new statistics are to be put into operation.

We focused our discussions about statistical reforms on the issues of unmet and high-priority data needs as perceived by members of the education policy community. The *Guide* is intended to provide the necessary substantive context on which to base subsequent discussion of burden, cost, timeliness, specific measurement metrics, and the like.

With this *Guide*, the National Forum seeks to begin an interchange with data providers that recognizes the legitimacy of our concerns about current limits to the usefulness of national education statistics.

More specifically, we expect the following:

- That all members and associates of the National Forum commit their constituent organizations to investigating with us the possibility of making the statistical system improvements necessary to meet the objectives outlined in our data improvement recommendations;
- That this *Guide* will serve as a basis for subsequent interchanges between members of the Forum and implementing agency(ies) at the Federal, State, and local levels on statistical improvement plans and strategies for implementing these recommendations. Those parties include relevant operational divisions within NCES, other units with statistical collection and reporting responsibilities both within and outside the U.S. Department of Education Department, and representatives of State and local education agencies. As the sponsoring agency of the National Forum, the National Center for Education Statistics should facilitate these interchanges; and

- That based on the results of these discussions, the National Forum will develop a ***strategic plan*** for implementing this report's statistical improvement recommendations. The plan will set priorities from among the list of recommended improvements, point out the considerations that must be addressed before particular recommendations can proceed, and describe the steps to be taken for meeting such considerations.

The National Forum also expects to use this document to guide the work of its other committees. For example, the Forum's Technology, Dissemination, and Communications Committee is working on improvements in ***how we go about collecting education data***. This *Guide* will help the committee define the variables that should comprise these newly developing data systems. Similarly, the Forum's Policies and Procedures Committee will use the document to help shape future Forum and Cooperative System activities, including systems of financial assistance to States so that they may develop the capacity to meet the high-priority data improvement needs outlined in the agenda.

Despite our ambitious hopes for the *Guide*, we recognize that its impact depends, in large part, upon an understanding by the education data community of the broad-based, consensus-building approach by which it was derived. We trust that those who develop and implement statistical policies in education will take this improvement agenda seriously because they believe, as we do, that creating a national education data system based on a spirit of cooperation and consensus building will result in higher quality data, superior policymaking, and, ultimately, a more effective and efficient education system.

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